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ABSTRACT

This document presents the papers and seminar discussions of the Forum. Thirty-eight papers were presented covering (1) the relationship of institutional research to general issues of policy formulation, (2) academic policy formulation, (3) administrative policy formulation, (4) enrollment policy formulation, and (5) special interest groups. The proceedings of 18 seminar and workshop sessions accompany the papers. (RA)

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INSTITUTIONAL RESEARCH AND INSTITUTIONAL POLICY FORMULATION

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INSTITUTIONAL RESEARCH AND INSTITUTIONAL POLICY FORMULATION

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FOREWORD

The theme of the 1971 Forum was "Institutional Research and Institutional Policy Formulation." The papers present the views of 67 persons in 48 institutions, principally from the United States but with some representation from Canada and England.

This year's Forum focused on five major topics that lie at the heart of the nature of institutional research's function on college and university campuses today.

In reading the papers contained in this issue of the Proceedings, one becomes aware of the wide range of activities subsumed under the heading of institutional research. This variety seems to signify both the great usefulness of institutional research and its search for identity. What seems to be most pressing is the need of institutional research officers to find a self-understanding that can allow them to become fully involved in the many roles they are requested to play while at the same time maintaining their individuality and a certain independence. Institutional research will contribute to the quality of university life only as it operates out of the solid base of its own essential position in the organizations it serves. The current volume will hopefully develop further an understanding of what that position is at this moment in time.

December 1971

Clifford T. Stewart

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PRESENT REALITY OF INSTITUTIONAL RESEARCH

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During the past few weeks I tried to decide whether a presidential address was an honor or an obligation, an opportunity or a threat, elevating or disconcerting, exciting or a crashing bore. After much careful thought I was able to determine with remarkable clarity that I didn't know. I also concluded that presidential addresses once spoken are never read and presidential addresses once read are never remembered. Why then do I stand before you? Mere custom has not motivated me to assume this role today. I come with a message and if I can cause a few of you to bring my message to others I will have satisfied myself that my presence here had purpose. The message is simple: institutional research *is* real, institutional research *has* value, institutional research *has a* future.

My message is not evangelical, its contents are less important for the zeal which may be implied than for the pragmatic information which is intended. Pragmatic, for if the message is not acceptable to any who are gathered here it certainly will have no meaning to others, but if the message is acceptable to some of you there is no more appropriate group who can deliver it to those places where it will do the most good.

For most of the past decade institutional research suffered an identity problem of unusual persistence. From the first open forums at the beginning of the decade the meaning of institutional research appeared to be lost in a labyrinth of individual definitions perpetuated for individual needs. Its reality seemed elusive, if not cabalistic. Perhaps the fault lay in the fact that we spent too much time talking to ourselves and not enough time talking to those in higher education who have the greatest need for the benefits which may come from institutional research.

Perhaps the fault lay in our eagerness to get on with the job and in our willingness to assume that any activity by the name of institutional research was intrinsically acceptable. A more plausible explanation is that an identity could not be discerned for no clear image had formed. With some astonishment one realizes that the lack of clear identity did not suppress the growth of institutional research. More incredible is the behavior of some observers of higher education who persist in searching for institutional research as though it had no existence. If the identity problem was due to its embryonic state during these years then we had better let those who have not examined the incubator for some time know that the ontogeny has endured, the egg has hatched and we are happy to announce that although we may have an ugly duckling we expect it will soon become a handsome swan.

The reality of institutional research has been established, and it is necessary that it now be given healthy nourishment for its maturation. In the past, well intentioned critics have developed elaborate hypotheses for the failure of institutional research to achieve a level of development which they consider important. Remarkably fashioned, these hypotheses systematically and intricately show how institutional research has failed to produce desirable products, laudable programs, useful methodologies and creditable goals. In large part, if not wholly, these writers examined institutional research at some time in the distant past and then went away to create in their imaginations the form and nature they either wished or expected it to be. When they tried to match their visions with reality the congruence was poor and they were driven by the disharmony to denounce institutional research as having little beauty and less charm.

Whatever its nature, institutional research is real. It occupies a distinctive position in the hierarchy of higher education and its identity is readily discernable to all whose perceptive acuity is not obscured by conceptual screens. Institutional research is real, but it is not sublime. It is not the ultimate answer to all the ills of higher education; it occupies no transcendental position which provides it with insights inaccessible to others; there are no occult powers within its purview to resolve problems by conjuration. The individual institutional researcher exists as a reality also, but he is not more omniscient than the president, more concerned than the dean, more insightful than the faculty, nor, fortunately, more convivial than the alumni director.

If not these things then what is the corporeal nature of institutional research and what gives it sustenance? Institutional research is an attitude, or, better yet, a collection of attitudes. Without looking for subtle or profound purposes, a summary statement of institutional research is that it is an attitude of critical appraisal of all aspects of higher education, which has as its primary purpose the assessment and evaluation of the expressed goals of the institution and the means used to achieve those goals, *and* that this assessment and evaluation are guided not by purposes higher than the goals themselves, but simply by the estimated efficiency of the processes and the probable utility of the results. Of critical importance to this statement is the separation of the field of institutional research from the researcher himself. He may think his purposes are more virtuous than his institution's, but this failing is undoubtedly common among other constituencies on campus.

If, however, the researcher can prove that the goals of the institution are worthless, potentially destructive or merely insipid, his efforts to redesign them through the enterprises of his work certainly would constitute a highly desirable role. Generally, it has been this role upon which the critics have focused. They have called upon institutional research to remake higher education in the image they find most desirable. The critics do not seem to understand that this role cannot sustain institutional research. If this field were dependent upon its ability to develop new philosophies of education and new goals for colleges and universities it would have never grown to the extent that it has. Both

practitioners and users have valued institutional research for its primary function; self-examination of the institution. But self-examination is not tantamount to creativity. The creation of new goals and new roles for education or educational institutions cannot and should not come from any single discipline. While institutional research is sustained through its ordinary functions, it has, on occasion, discovered new tools and new relationships which have been fruitfully applied.

Although these new tools and relationships have value they have not represented revolutionary concepts of universal application and major influence. The fact that such concepts are rare in any discipline may be consoling to practitioners of institutional research, but we should be less concerned with the absence of this type of creativity and more concerned being inventive and resourceful in the execution of our primary function. No plan for mediocrity is being advocated here. The effectiveness of institutional research is related to its ingenuity more extensively than can be found among many other fields, for a singular reason. As noted earlier, institutional research depends less on constellations of methodologies than other fields of research, for it is bounded not by method but by attitude. If we followed the critics lead we would have abandoned attitude in favor of method and sought not improvement of our institutions but perfection of our techniques. Institutional research need not abandon the latter to maintain the former role, but self-examination is valued more for the inner harmony it achieves and less for the outer beauty it may exhibit.

It is also not necessary to abandon our critics who wish to pull us towards the resolution of more global problems. While there should be no inhibitors which prevent our working on global problems, there are constraints for not doing so very often. These constraints are partially a matter of resources and partially a matter of the location of the institutional research activity in the structure of the organization. But the important constraint lies in the basic nature of its role, self examination. Self examination is healthy, self examination can regenerate, but the value of institutional research is measured more by its introspective intentions than its Olympian potential.

A catalog of possible future institutional research efforts would serve little purpose for this audience. The diversity of research and studies in this field make any catalog lengthy and perhaps instructive, but hardly entertaining for an after dinner speech. We should be less concerned with a description of our tasks ahead and more with our good intentions.

How can these good intentions be nurtured in the future? They will not be nurtured if we focus our attention on processes rather than goals. Program budgeting, management information systems, simulation models, inter-institutional data banks are all creditable activities, but if they entrap us so that we are mesmerized by the complexity of their structure, intimidated by the difficulties of their application, and overwhelmed by the specificity which they require, we will have failed. All around us commissions, assemblies and committees are telling us that higher education is on the threshold of profound changes. While it is not the role of institutional research either to stem the tide or ride the crest, it is also not our role to build elaborate sand castles with our backs to the ocean. How important will vastly expensive, enormously detailed space utilization models be if and when universities are without walls? How will we be served by intricate methods devised for measurement of class sizes and faculty contact hours if course programs are replaced with non-course programs? Will we have to toss out our enrollment prediction models when degrees are awarded more by examination and less by attendance? The questions are endless and the answers will not come easily. Although institutional research must be concerned with problems of adaptations of present tools and searches for new tools of measurement and prediction as these future developments unfold, it must not limit itself to these activities. Institutional research will remain viable in the future only if it retains its critical nature. Regardless of the extensiveness of the changes in higher education, they will be goal directed, albeit, toward different goals. Within its limited capacity and resources, institutional research will have failed in its function if it does not devote a significant proportion of its time and effort to evaluation of the programs which constitute the means for achieving the institutions' goals. We will not remain viable if we devote all of our time to mastering electronic gadgetry and stockpiling massive amounts of data. Institutional research has a unique role in the future, but, it is not one of master mechanic or guardian of the silo.

These thoughts on the future of institutional research, as well as the preceding ones on its value and reality, form an appropriate background for some remarks I wish to make with reference to a special conference on the future of institutional research. A few weeks ago a small group of researchers and administrators met at a country retreat to attempt to describe accurately and succinctly the future role and nature of institutional research. They came from various areas of United States and from Canada and they represented backgrounds and interests in several fields including, of course, institutional research. With the assistance of the Esso Education Foundation we were able to spend about three days at a reconstructed Shaker village, called Pleasant Hill, in Kentucky, in discussion of several specific questions concerning institutional research. I plan to put together a complete report on this special conference in the next two or three months, but a few remarks would be appropriate here and I hope, will not be redundant in the report.

First I wish to express, once again, my sincere appreciation for the many thoughtful letters I received last year from the membership in answer to my question of what lay ahead for institutional research. The provocative replies I received were invaluable in helping to establish the main themes for the special conference. Although there were some notes of pessimism the overwhelming majority of the respondents viewed the future of institutional research as positive but requiring either reconfirmation of certain early practices or the inclusion of new ones or both. While there was some disagreement as to what would constitute a vital activity, there was uniform opinion that the field and the Association for Institutional Research had an important part to play in higher education.

Second I wish to note a personal revelation which I had not anticipated at the special conference. This revelation occurred when I discovered that participants who were administrators and researchers and whose enterprises were in fields other than institutional research but who were sympathetic to its uses and needs, were completely in accord in their acknowledgement that they gained much understanding and became even more sympathetic to the role of institutional research. The revelation to me was that we practictioners have not done enough to educate higher education about the value of institutional research. Now this discovery may seem insignificant, but the participants were sincere in their remarks, and they exhibited apparent enthusiasm with regard to the potential of the institutional research function, both currently and in the future. These reactions force me to conclude that despite our past and promised growth, we must find the instruments for greater dissemination of the purposes and value of institutional research. Such dissemination should be designed not to promote our welfare, but rather to benefit higher education through those activities appropriate to our role. The problem for the special conference was quite clear. It was to reexamine the role and nature of institutional research in higher education, to reevaluate and redefine the objectives of the Association, and to propose guidelines for the stimulation and development of the practice of institutional research in colleges and universities.

Specifically, the conference had as its objective the publication of a statement of proposals 1) for the establishment of precise conceptual boundaries of the definition of institutional research, 2) for the description of the natural set of tasks assignable to institutional research consistent with its definition, 3) for the exploration of new or reemphasized tasks which heretofore have not existed or been prominent in this field of higher education, 4) for the improvement of the effectiveness of the institutional research efforts in the colleges and universities, and 5) for change in the role of the Association to improve its service function to institutional research and to higher education in general.

To find answers to the problems and to work toward this objective, the participants were divided into small groups and each group was asked to consider several questions. Additionally, the groups assembled at various points during the conference to review and rework each other's responses. The questions were grouped under the general headings of what should institutional research be, what should it do, and how can it be more effective.

There was nothing extraordinary about the questions, for they dealt with the same topics which have bothered all of us for some time. The uniqueness of the conference, I think, was that it was designed to provide constructive and positive answers to dispel, or at least diminish, the perpetual vacillation which has existed with reference to these questions. Despite the diversity of the backgrounds of the Pleasant Hill participants and despite the expected and healthy lack of complete consensus on some issues, there was remarkable accord that institutional research should play an active role in sustaining the vitality of higher education institutions and that the Association can promote and support these activities through its open forums and other programs.

I hope your forbearance is sufficient to allow me to end these remarks with some personal observations. If my previous comments have seemed to some of you too sanguine, I ask for your indulgence, but I do not apologize. If for others I have overbalanced the message with unnecessary skepticism, I can only offer you the fact that my nature has a somewhat unholy mixture of demoniac enthusiasm and compulsive cynicism.

From its inception, institutional research has been praised and condemned with equal fervor. Its present and future roles have been seen by many as encompassing a wide range of activities, and, in many instances, a commanding leadership. Others have regarded it as useful but tiresome busy-work. I think the role of institutional research is clear enough to those who are neither inspired by megalomanic expectations nor depressed by melancholic concerns. The problems of higher education were not devised to create and enhance the glory of institutional research and the intense, multifarious needs of higher education will not disappear with the demise of institutional research.

As a field of higher education, institutional research will be fruitful and gather strength if the individual researcher neither allows himself to be intimidated by those who wish to save our institutions through pervasive management untempered by social conscience nor permits himself to ignore the value to be derived from management tools when aptly applied. As an Association our growth and effectiveness will not be sustained if we are cautious in our search for new and useful programs, inept in our ability to attract new sources of income, parsimonious in our spending, and indifferent in our membership recruitment.

If we are pretentious in our pride for our achievements to date, then let us simply accept it; if we are satisfied to rest with this achievement then we are foolish, and, if we cannot accelerate and enlarge on our achievements then, I, for one, will be damned disappointed.

ACADEMIC POLICY AND EFFICIENCY

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All the students in the forty-four British universities would go into about eight of the largest American campuses. My own university has only three thousand students and is only seven years old. I am conscious, therefore, that you should be far more experienced than I. However, you have no doubt decided that there is value in seeing things from the viewpoint of the mouse as well as from that of the elephant, so the mouse will do his best to oblige.

Let me first explain that the Vice-Chancellor of a British university is defined to be both the senior academic and the senior administrative officer, the superior posts of Pro-Chancellor and Chancellor being honorific. The Vice-Chancellor is usually an academic—in my case, a Professor of Economics—and some show no great interest in the administrative aspects of their duties, leaving this to the next senior officer, called the Registrar or Secretary. There are also a few who, having been trained as administrators, find it hard to get on the same wavelength as the academics, it being well known to all true scholars that administration is a low form of activity. So the interaction which should exist within the functions of the Vice-Chancellor is not always there. However, in principle at least, the system recognizes that there ought to be an interaction; and it is this interaction which provides the subject of my address.

I begin with some bald assertions of the obvious:

(a) That the functions of a university can be defined (I use the term 'university' to cover 'college' also):

(b) That, since the means of attaining these functions are limited, it is to the advantage of the university to use them efficiently:

(c) That the management information system must therefore be such as will enable judgements of efficiency to be made:

(d) That if some staff or students do not agree with the defined objects of the university, they will be found to disagree with certain measures to achieve efficiency, because they will be trying to impose on the university different objects or a different order of priority.

However, the obvious is not always perceived. The functions of a university are usually defined incorrectly. The need for management information has been perceived in Britain only in the last few years. The use made of it is frequently slipshod and inadequate; and that, I suspect, is true here also. The conflicts of aim among faculty and students have not been clearly analysed or faced. Considering that we seek to teach others about scientific method, the primacy of truth and the power of the arts of management, our efficiency in dealing with our own affairs has been deplorably low.

Let me first take the objects of a university. It is too simple to define these as teaching and research. 'Teaching' subdivides not only into undergraduate and graduate work, but (more significantly) into factual instruction or training, and education taken in a larger sense as the development of critical and logical faculties and the enlargement of cultural understanding. If we think of 'research' as primarily the discovery of new knowledge—the typical activity of the scientist—then we must add two related but different activities. One is the activity of adding to the richness of our culture by new creation—the work, for instance, of the writer or artist, which should surely have an honoured place in a university. The other is best called 'scholarship', that is to say the rediscovery and reinterpretation to a new generation of the greatness of the human heritage. A man who makes no original discoveries, but who simply becomes profoundly learned on the works of Shakespeare, has a most important function in keeping alive a memory of greatness which would otherwise tend to fade. Finally, in addition to training and education, research, creation and scholarship, a university has a vital function in maintaining a store of culture, for instance, in its library. It is a very important part of the nation's memory; and it may store much material which is totally ignored by scholars in the present generation, but will be of value to those who flourish a hundred years from now.

In the variety of a nation's higher education, the six functions I have mentioned exist in all sorts of proportions and combinations. Institutions seldom, I suspect, think very clearly about what the proportions should be; they emerge as a kind of life-style, with the distribution of effort at Swarthmore different from that at Berkeley, and different again from that at Oxford or Middlesbrough Polytechnic or Clacton College of Education. But, at a particular moment, it should be possible to define what an institution is trying to do. At Lancaster, this would be in terms of a particular course structure considered relevant to the educational needs of the country. This in turn implies a distribution between training and education, research and scholarship, an emerging set of ideas about the encouragement of creative work, and a policy decision to build up a major library so as to lessen our dependence on more distant collections. Naturally, we do not have enough money to do what we want. What management information do we have at our disposal to help us to make the best of what we get?

Until recently we have had very little, except the crudest of comparisons between the unstandardized financial accounts of different universities and some very doubtful calculations of staff-student ratios. In the last five years, however, the Committee of Vice-Chancellors and Principals has tried to fill the gap. We began with inter-university studies of the use of certain kinds of buildings—for instance, chemistry laboratories, engineering laboratories, 'non-specialized teaching accommodation', halls of residence, and refectories. These revealed a great variety of intensity of use and some remarkably low utilization rates (largely unsuspected by the universities concerned). We were then able to suggest, in a number of instances, reasonable norms of use

at which universities might aim.

So far we were following the example of the University of California, though, not having to please Governor Reagan, our norms were less severe. We then embarked on a study of the cost functions for particular subject areas in the universities. In explanation of this, it should be said that much of the diversity of British higher education arises between the autonomous Chartered universities and the other state colleges. The universities differ greatly in the subjects they offer, but particular subject-departments have a strong family resemblance over the whole university system, and most salaries are related to national scales. It therefore makes sense to deduce from a cross-section study of costs in relation to student numbers in *different* universities what might be the behavior of costs in a subject-department in a particular university as that department grows.

The results obtained were interesting. They show a fairly regular pattern of sharply declining total cost per student up to a size of about 120 full-time-equivalent students (i.e. counting students who audit single courses at the appropriate fraction. It should be explained that costs include an appropriate fraction of the cost of central services, but not student maintenance). Beyond that size the evidence tentatively suggests a continued slow decline for certain non-science departments (up to the largest observed size); but, surprisingly, in the science departments—where one might expect important economies of scale in the use of expensive facilities—the decline is not apparent, and there is some evidence of a rise. This may be a consequence of a change in the nature of research as a science department grows, though the most obvious discontinuities can be eliminated by studying separately, departments with an interest in expensive specialities such as nuclear physics or space research.

The most important result, however, is that a considerable proportion of departments in British universities are too small and suffer in consequence from high costs. (For instance, all but one of the Russian departments operate on the high-cost part of the curve.) This is a consequence of an excessive enthusiasm for diversification in institutions whose total size remains small; and, since there is no necessity for a university to do everything, it points the way to an opportunity for a substantial increase in efficiency. For instance, my university is about to increase in size by over 80%, but with only one new department.

Some preliminary work has been done on other cost areas, for instance, on the determinants of administrative and library costs, but more work is needed. The next major area of study related to the use of staff time, which needs to be known if an efficient allocation of staff to particular activities is to be made. A sample survey was conducted by asking members of staff to keep a diary allocating each half-hour of the day to undergraduate teaching, graduate course-work, graduate research, personal research, 'unallocable internal time', external professional work, and private non-professional activity such as going to sleep. ('Unallocable internal time' includes activities like general background reading, which may contribute to both teaching and research.) The diary was kept for three weeks—in normal term-time, during examinations, and during the students' vacations—and each respondent was asked to reveal the length of his personal holidays so that the average allocation of time over the year could be calculated. One immediate result is to reveal that, though graduate students in some subjects certainly cost more than undergraduates, they take little more staff time, and, in consequence, many universities have been misallocating staff between undergraduate and graduate work. The main analysis of the results is currently being made.

These studies of all universities must of course be backed up by appropriate study in individual institutions. British universities are financed over five-year periods, and two key points in financial planning are therefore the submission of the quinquennial plan and the revision of the university's operating plan when the actual allocation of money is made. In my university we have a research unit under the department of Operational Research which is charged with developing models of the university's operations so that the implications of alternative policies can be established speedily. Even in quite a small place such models can be very complex, because a student majoring in subject A has a wide choice of other subjects which he can take as well, and one must assume it possible that the exercise of this choice will alter if new options are added to the curriculum. In fact, so far as possible, we prefer to use staff numbers as the primary planning variable (from which costs are deduced), leaving student loads to be adjusted to staff numbers through admissions policy. (It must be remembered that in Britain no student has an automatic assurance of a university place.)

By using the national and local data to the full, one can get considerable increases in efficiency. As an example, my university, with no discernible drop in standards, currently has nearly 20% more undergraduates and twice as many graduate students as the number for which its grant was intended four years ago. But overall planning needs the support of internal self-discipline. Here we find that the best method is to give each department and section a global financial allocation and to leave them a great deal of freedom in deciding how to spend it. Thus the distribution of expenditure between secretaries, technicians, office expenses, laboratory supplies, travel, visiting lecturers, etc. becomes a decentralized decision; and we are now about to allow some switching between these heads and faculty salaries. This means that faculty members no longer have an incentive to maximize their claims on a whole lot of separate funds (which was the system in other universities I have known); they are given the opportunity to act like prudent housewives with their own money. The result is that nearly all departments fail to spend the sum available, and in normal circumstances we allow the surplus to be carried forward to the next year so that the advantage of economy is not lost. Occasionally, of course, things go wrong; and we keep a roving internal auditor to make investigations at points where inefficienty is suspected.

Another area appropriate for studies of efficiency is the conduct of building programmes. These, in Britain, are tightly controlled, and we probably underspend on the

quality of finishes, losing in long-run maintenance costs (even on a discounted basis) more than we gain in initial economy. Almost all projects involve *some* government finance, if only for professional fees and furniture, and the control of standards affects all buildings to which the government contributes in any way. Therefore the individual institution can usually blame higher authority for the faults of its building programme. However, we compound these faults by errors of our own, usually due to an attempt to plan buildings in accordance with precise specifications imposed by faculty. It is very hard for a lay administrator (or even an ex-academic from another discipline) to tell a professor of biology that he really does not need eight thermostatically controlled fish tanks (and his successor will be asking for more money to clear them out of the way), or to convince a professor of history that his supposed need for elaborate projection facilities in a lecture theatre will arise much less often than he thinks, and could in any case be provided five minutes away. But I am convinced that time spent defining the real essentials of a building and eliminating the special requirements and services which are not really essential (or could be provided in other ways) can lead to major economies. This is particularly so if, having defined the essentials, one can tell the architect to use his ingenuity in providing them at a defined low price. In Britain, architects whose buildings are always more expensive than you expect grow on every tree, while those who can really design to a price and hold the contractor to it are rare and splended beings—and, to deal with an obvious point, there is no reason for cheapness to be associated with ugliness. My university was the pioneer in Britain in the design of student residence at a cost almost 40% below the previously accepted norm—and in a form which offers social advantages and shows no decline in room size or standard of amenities. (Our success in this matter did not endear us to other universities, since it disproved their assertion that 'it can't be done'). We have now gone on to the design of an engineering building at least 20% cheaper than most, but (in my view) better. For the essential need in an engineering building is a good factory floor, and universities have been paying more for a 'factory' than any industrialist would tolerate. If we had learnt more quickly, I am convinced that we could have built our pure science buildings with similar savings and with improvements of quality.

But, as you all know, running a university is not like running a business; and presidents who act like business tycoons come to grief. The trouble is that a university is an intellectual community of highly articulate people, each of whom thinks himself well able to solve not only the problems of his own discipline but any problems of economics or business which may come his way. Furthermore, it is almost impossible to devise a means of arriving at a rational academic policy; what passes for long-range planning in British universities is a state of uneasy equilibrium between departmental war-lords. I would not, however, advocate exchanging this situation for one of dictation by a powerful president, even though that might provide some intellectual consistency in educational policy. Let me, therefore, try to analyse what the problem is.

A university or college not only has several different (though related) objects; it pursues these objects in the context of many different disciplines which are professionally distinct, even though they may sometimes interact. In industrial terms it is a producer of perhaps hundreds of distinguishable 'products'—first degree courses in astronomy, graduate courses in Japanese, research in hydrology, scholarship in Coptic, and so on. An industrialist would, if he found himself the owner of so diverse an enterprise, impose a policy on it which his line managers would be required to follow. So far as the *teaching* duties of a university are concerned, some degree of imposed consistency is possible without adverse results. But as soon as one enters the areas of research and scholarship, which are essential to the quality of teaching, it is necessary to give the individual faculty member considerable freedom to do his own thing; dictated research will lack the essential touch of creativity. Of course the freedom can never be absolute, because the needs of members of faculty conflict. But the problem is *first* to give as much freedom as possible within the strictly essential constraints, and only as a *secondary* objective to try to give to the whole programme some tidiness and consistency.

The constitutions of universities do not always reflect the realities of the situation. Substantial powers often rest with councils, which correspond to your boards of trustees; and, though I think it is certainly necessary for the voice of the general community to have its influence on policy, the lay members of a council are commonly little suited to the making of detailed decisions which have academic implications. If they have sense, they do not try, but devolve the powers back on to the academic community. In my university, there are three main systems of democratic participation: the Boards of Studies, to which all members of faculty belong: the Syndicates of Colleges, again including all members of faculty but also some students: and the Junior Common Rooms of colleges, to which all students belong. All these bodies elect members of the Senate, which is the real government of the university in all essential matters and which also contains the head (not necessarily a full professor) of each department. Senate is therefore an assembly of senior and junior faculty members and students serviced by a number of quite small sub-committees, of which the most influential is the Development Committee. Although the powers of appointment and financial control belong to Council, Senate in fact makes all faculty appointments under delegated powers (and in turn delegates the power, normally to committees of three), and it decides all questions concerned with the allocation of the academic budget (that is to say, the total income of the university less the cost of heating, maintenance and other physical services).

Our Senate is the physical embodiment of the real problem, namely, that there *are* a lot of different interests which need to be considered—and you will note that the consumer interest of students is well represented. You will probably think also that this physical representation is only possible because we are a very small university. This is not quite true. The number of interests, e.g. separate disciplines, will not grow in proportion to student numbers, and the same form of organization could probably work quite well

up to about 10,000 students (especially as social life is centered on colleges of quite small size, about 500). As Senate becomes bigger it will necessarily come more into the hands of its committees, but it could, I think, continue to exercise real power over the matters of importance. But I confess that I would not like to have to devise a constitution which would preserve freedom and a healthy interaction of interests in a university of 30,000. Such an institution, I think, would tend to fall apart into separate subject empires, or it could be planned as three or four decentralized units, or it could become an open or concealed dictatorship. But this is surmise, and many of you will be able to tell me how to run a jumbo university.

In the Senate, the head of the Chemistry department may be heard uttering loud sounds of battle because he thinks that other scientists are getting resources which ought to be his; but there is no real disagreement among the scientists about the objects, both in teaching and research, which they ought to be pursuing. The situation is more difficult (or, if you like, more interesting) if the objects of the whole activity are open to dispute. I sense some fear here that the interest of the individual member of faculty in his professional advancement, which depends on research and on prestigious graduate work, conflicts with the interest of the institution in good undergraduate teaching. This is much less true with us, though it is occasionally relevant, especially if staff have come to suppose that Britain always copies the United States. Somehow we have so far managed to maintain a climate of opinion which places great importance on undergraduate teaching; full professors often consider it to be their duty to teach first year students, and excellence of teaching is certainly a factor in promotion. I am not therefore conscious of any great divergence of view among faculty, or between faculty and students, on the relative importance of reserach and teaching.

But there are differences, and I will illustrate them from two areas. The first relates to the balance of vocational and non-vocational studies. Historically, universities began as vocational or professional training schools; but now we undertake the general education of many students who have not the slightest idea what they want to do afterwards. Most of us who come from general institutions (as opposed to specifically professional colleges) probably want to keep the vocational and non-vocational elements in a reasonable balance. But what balance? The point is nicely illustrated by an attempt of my Development Committee ten days ago to introduce as management information, relevant to the determination of the balance of activities for the next five years, the percentage of unemployed graduates from each discipline. A large number, perhaps a majority, of faculty regarded it as totally improper to introduce this information into the discussions at all. (It was equally unpopular with students). This is an example of the point I raised at the beginning; one group thinks that graduate unemployment is relevant, while another would rest policy entirely on student demand (whether or not is it well-informed). The two sides are not prepared to argue from the same facts.

The second example relates to the influence of university teaching and research on society. A considerable number of the more politically conscious students, and a significant minority of staff, regard anything which can be considered a support to the established social and economic order as wrong. The activities of a business school, for instance, are totally wrong, even though a socialist or a communist state would still need efficient business methods; for the proper aim at this present time is to bring down the established order in ruins, and nothing which helps it to survive can possibly be right. Those who hold this view, therefore, would base academic planning neither on student demand (for there is certainly a demand for business courses) nor on the stated needs of society, but on making universities subservient to a political theory. Of course, some of the young have always felt this way; but it has been a long time, I suspect, both in your country and in mine, since those few who actively desire to destroy the social order have been joined by so overwhelming a silent majority of those who will not lift a finger to defend it. Now I (being an old-fashioned liberal) naturally regard a university as a place which should welcome in its student body conservatives, liberals, communists and anarchists, and whose academic policy should on no account be shaped for political ends. Some of those whose views I have described would attack any measures to make the university more efficient on the grounds that it is itself an essential part of the order they wish to destroy. Others, though recognizing that the university may have a value as an independent critic of the social order, are suspicious of the methods used to attain efficiency, because those methods are also used by business. Efficiency itself suffers from guilt by association with the profit motive. You will see again how difficult it is to find a common ground of argument.

My choice of examples must not lead you to suppose that the British university system is about to collapse or be perverted. On the contrary, it is, by international standards, stable and peaceful, and its traditions are much too strong to suffer serious damage from the attacks of its enemies. The point I want to make is that the nature of the free search for knowledge implies a form of organization in which a great many people have a voice and an influence, and that the administrator must expect that lack of unanimity about the objectives of the enterprise will interfere with his efforts to achieve a tidy and efficient policy. The forms of management information, a few of which I have discussed in the British context earlier in this paper, will be criticized, and some rejected as irrelevant. Perhaps we ourselves will be thought irrelevant too.

I suppose it all makes life more interesting. A much respected British Vice-Chancellor, shortly after making up his office, went to call on a crusty and eccentric old member of his faculty who had ignored a summons to come to the Vice-Chancellor's office. "So you are the new Vice-Chancellor!," said the old man. "I heard they'd been getting one of those. Now I want to begin by making it quite clear that I regard the Vice-Chancellor as an unnecessary fifth wheel on the academic coach." In the spirit of this observation, may I offer fraternal greetings from Britain to the Fifth Wheels of North America?

THE ANONYMOUS LEADERS OF HIGHER INSTITUTIONS

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This is a sobering paper in which I may alienate some of you. But after sitting in on the Association sessions yesterday, I think my concerns are well founded. If the conditions I describe are not already present, the aspirations of many of our members will lead to them.

The current concern over the governance and policy control of higher institutions grows out of the frustrations of many constituencies. Frustrated in getting their perceived needs met, students and faculty demand from presidents and boards a greater share of the policy-making power. Uneasy and unhappy about costs and disruptions, the public and legislature demand that the boards of trustees and top administrators bring law and order to the campus. Paralleling their concern for peacefulness at almost any price is the clear warning that presidents and boards had better be accountable for the quality, kind, and cost of educational programs being offered to the undergraduate students.

In every case the assumption is made that the top administrators, especially the president and the governing board, have the power, the authority and the means at their disposal to command policy and achieve the desirable ends. One can understand the frustration of the faculties with what has happened, for no matter how much decision control they obtain for their committees and senates, they never seem to obtain enough to control policy, so they fight "the administration" for more. Students, who are now supposed to be wiser than their professors, have not appeared so in their struggle for their share of power. They sat in and demonstrated against the president's office, disrupted board meetings and generally made themselves known to those who ostensibly had power to give. They too remain frustrated. Both faculty and students believe that the president and the board have a surfeit of power to share. They claim that the leaders' cup of power runneth over into arbitrariness and tyranny—and they cry, "Share and become democratic. Let students and faculty sit on boards, policy councils and the secret sessions where the real decisions are made."

The general public and, for that matter, the political policy makers are as misled as the faculty and students in thinking that omnipotent leadership for a public higher institution rests with the president and the governing board. I say misled, because the people who make the most important decisions on the way to educational policy, and those who finally steer the direction of curricular change, accommodate institutions to new student demands and determine the efficiency factors in administration are not, necessarily, the president and board. Nor are they the students and faculty.

Much of the most significant leadership for public higher education today is anonymous. Few realize the extent to which unknowns, both within the institution and outside it, really control educational policy. Furthermore, those in internal positions are becoming just as powerful in the nonpublic institutions as in the public ones. Beyond that, most nonpublics will be as subject to new external leadership as the public ones, as the states meet the importunings of private institutions by providing them with tax dollars for operations.

Internally, the persons most responsible for the new leadership in both public and nonpublic higher institutions are those engaged in institutional research and analytical studies, and those who make and manage the budgets. The public rarely, if ever, hears of these people, and the faculty and students are only vaguely aware of their existence, knowing little of what they do.

Bureaus of research and analysis are new to the internal structure of colleges; the business office is long-established. The business manager, under a variety of different titles depending on the size and type of institution, has always exercised far more influence on the budget askings and on the internal fund allocations than commonly supposed. Even when faculties and, now, students determine that a new program or a major change in curriculum is necessary, it is the money manager who assesses the financial means for its funding.

To effect new ideas normally requires new money or a reallocation of existing funds. The alternatives which the formal policy makers will have before them will be those which the business manager suggests after juggling (sometimes by such sophisticated means as simulation models and computers) his many variables. The variables include, among others: sources of income, the conditions under which such funds may be expended, the commitments previously made orally and in writing to outside contractors as well as deans and department heads, the rules and attitudes of the funding sources (budget agencies, donors, foundations) toward the particular changes proposed, and all of the rules and regulations which have been established by outside agencies and inside councils and senates. Because his office is the sole interpreter of most, if not all the constricting documents establishing operating parameters, whatever the money manager decides can and cannot be done is quite likely to prevail with the president and internal committees, to say nothing of the board. Usually only persons who have worked closely with the policy makers in the business and budget offices know the extent of their discretionary power, and the general deference paid by the president and board to their counsel.

Significantly, the AAUP has just now discovered that the business office has a policy role, although it has had Committee T for internal governance working for many years. The Association wants faculty to have more contact and influence on budgets and internal fund allocations. The members believe business and money managers must have much power because they have not located significant amounts of it in other councils or offices of institutional governance. When and if they get involved in financial affairs,

they will finally know what real power is exercised by fund control. But at the moment the people holding the lid on the money pot are anonymous.

The bureau of research and analytical studies has a similar impact since it, too, controls information and interprets data and documents which lie outside the ken of most, if not all other persons in the institution. Up to this time, the researchers have had almost a free hand to collect the kinds and types of data which they think are useful, and to engage in research which they believe to be important. Their findings are interpreted according to their personal biases and assumptions and are released in whole or in fragments, as they see fit, to as large or as narrow an audience as they deem appropriate. What is researched and how it is analyzed in terms of the objectives to be sought is determined by the researchers, not usually by the policy-making bodies of the university. It is true that occasionally a vice president or the president asks for a particular study to be done because of some current crisis. This directed research often infringes on the free research which characterizes bureau activity. Even for such studies, unless the requesting party takes a working part in its design and analyses, the researchers may continue to assert their freedom to collect and analyze data and information which they deem important (as against a policy maker's perceptions). Normally they may also write up the directed research and provide the alternative courses of policy action which they deem logical or desirable from their frame of reference.

Neither to the money managers nor to the institutional researchers do I impute bad or malicious motives. Indeed they provide to the policy-making structure a major source of expert and often pertinent information which would not otherwise be available. They do as fine a job as their talents and professional competence will allow. No, it is not criticism of these people which I have in mind. Rather, I attempt to reveal the limitations within which the visible and legally responsible policy makers reach decisions. Many decisions are made for them by these staff members. Decisions of long-range importance are often circumscribed by the kinds of information furnished as well as the form in which it is presented. The researcher's argumentation, his alternatives, his underlying assumptions, his selection of data and also what he does not reveal, may be far more determinative of final policy than all the hours of all the faculty members, students, and administrators spent in policy council deliberations.

The business manager and the institutional researcher need to be closely associated with the decision makers. They also need to be told, and not to generate for themselves, the goals of the institution, the operating objectives, and the broad assumptions and values basic to their achievement. These staff personnel also should be governed more closely in establishing information systems and have far more input from policy makers in the interpretation and analyses of data and information. Only then will those with authority give as much direction to the institution as do business and research staff members.

Two other internal officers also may have extraordinary influence on policy without being fully directed toward the long-range planning goals of the institution. I mention them without dwelling on detail. They are the admissions officer, who finally determines which students, with which capabilities and from which socio-economic backgrounds enter the college or university. The other professional is the student financial aids officer, who has had substantially larger and larger sums to distribute to prospective and enrolled students. Among other factors, his perception of financial need, college objectives, scholarship records, ethnic minorities, and the straight vs. the youth culture has significant bearing on the kinds of students the faculty will find in their classrooms.

Again we find professional people doing the job for which they were trained. But again, we need to be aware of the impact of decisions by these anonymous officers who are subjected to little real supervision. What they do has significant implications for the ability of the educational part of the college or university to carry out its tasks. Both faculty and administrative policy makers should be fully involved in establishing the guidelines for final decisions by these officials.

From these observations I conclude that certain officers, who are virtually unknown both within and without the institution, may be setting directions and making more important policy for the long-range welfare of the institution than do the formal policy councils and chief administrators. The lacking elements in most institutions which, if present, would bring unity and coordination to the present desperate efforts of subalterns are: a long- and intermediate-range plan for the institution, setting forth its goals and assumptions, operational objectives, and guidelines for achievement; one or more high administrative officers charged solely with the task of planning and coordinating the implementation of the plans; and an advisory-working task force which has the ongoing responsibility of keeping the plans and their implementation under constant surveillance. I agree with Earl C. Bolton and Fredric Genck, who in a recent article presented the view that universities and colleges need larger and more competent administrative staffs at high levels for academic affairs and for planning.[1]

Within the institution we can solve the problems arising from anonymous leadership. But outside the institution, the faceless ones are likely to be strengthened and to become a greater force for control of educational policy than they are today. Who are these external people and what do they do?

The first of these outsiders exercises control not only over the educational program within the institution, but also heavily influences organization and administration. These are the accrediting agencies and their troops of invisible professionals who do the reviewing and recommending. The purposes of accreditation initially arose from concern about "diploma mills" and for need to facilitate the transfer of students among institutions. In addition, today the organizations say they: promote high standards, protect the society from incompetent professional practitioners, encourage self-evaluation and experimentation, and protect the institutions from undue political interference and the society from educational frauds.

Accrediting agencies fall into two principal types; those

which accredit a whole institution, and those which accredit only a particular professional program. All are voluntary associations with the six regional ones formed and controlled by the institutions themselves. While these six have great influence, they are at least subject to the will of the conference of institutions which they accredit. On the other hand, there are now over forty professional associations which assert rights to accredit programs within the institution. These associations consist of practitioners in the field and the professors in the universities who prepare the practitioners. The institutions have little or no control over such associations. They are dominated in numbers by the field professionals, but seem to act as an internal self-interest group for the professional school or department. The university is especially vulnerable to the demands of the ever-increasing number of professional accrediting associations, and may be subject to the standards of twenty or more of them. Each requires the university to conform to higher and more elaborate standards of education, including certain minimums for student-faculty ratios, library resources and physical space. Each also demands particular organizational and administrative arrangements, ranging from the title of the head of the faculty group to whether it will be a department or school with independence from the regular governing machinery of the university. After a dozen or more of these associations establish their requirements, the latitude left to the administrators and the governing board is not very great. Whose leadership prevails? Who makes the decisions?

At one time, lack of accreditation meant only that the student pursuing the program would be heavily penalized in transferring to another institution; today it has far more drastic implications. Federal categorical grants for the various professions, student assistance grants and scholarships, and state and federal aid to institutions are, with rare exceptions, limited to institutions and to programs which are accredited.

A few state systems of institutions have become so concerned over their helplessness in the face of accrediting societies that some states have seriously considered the alternative of establishing a single state accrediting agency and freeing their institutions from all other accrediting bodies. To achieve that same end, certain federal agency heads are recommending that a federal accrediting commission be established.[2] Certainly better coordination among the associations is needed, but that will only be a partial solution to the institution. Whatever the accrediting agency, or however the number may increase or diminish, the college or university will continue to be subjected to standards set outside the institution by persons who may or may not be conversant with its goals, purposes, and mode of life. This faceless leadership seems destined to continue and will become more powerful before it becomes less.

A second outside force has had mixed effects upon institutions of higher education, depending on the institution's type and the degree of commitment to graduate education and research. I refer here to the federal presence, which for higher institutions has many faces, many moods and many different (and often conflicting) objectives in mind. The difference between federal anonymous leadership and that which follows (in the discussion of the state agencies) is that the institution could avoid federal intervention if it chose to refuse all federal grants or contracts. Submission to the controls and strong influences of the federal government is voluntary. Theoretically, that is. In reality, federal flowers and candy have induced or seduced every level of government, much of industry and commerce, and all kinds of private agencies. Higher institutions have been equally vulnerable to federal financial enticements.

The federal interests in higher education are highly specialized ones, with their own priorities. Recently a scholar wrote, "Individual government agencies utilized the expertise and facilities of higher education institutions in the pursuit of their own programs, with little attention to the overall effect of piecemeal federal support on the functioning of the educational institutions involved, or of the national higher education system."[3] Many strains within the institutions have arisen. Imbalances have been created in the educational program by the concentration of federal funds on research and graduate training in the sciences. The project system of support through which funds are granted directly to university scientists has tended to draw the primary loyalty of faculty members from their institutions to agencies providing research funds,[4] and has reduced administrative control over budgeting and allocations of faculty time and institutional physical facilities.

In responding to the mission-oriented, fragmented federal programs, the institutions have found themselves with dozens of masters (all of whom are anonymous), each with scattered responsibility and no federal overall philosophy or goal to bind them into a coordinated effort. Indeed many agencies and programs seem to be working at highly divergent or cross purposes. Within the institution, the federal presence has further fractured an already badly-cracked set of educational and research goals. Beyond the immediate impacts of various programs, those institutions which have become the greatest partners with the federal government find substantial fluctuations in the level and kind of funding from one year to another, preventing sound program and personnel planning and resource allocation.

Each federal grant and contract carries with it controlling rules and conditions. Moreover each also allows other federal laws to be applied to the recipient institution. These laws, usually applicable to business and industry engaged in interstate commerce, and initially enacted for this purpose, are the anti-segregation and anti-discrimination provisions, including race and sex, and the requirements of the Fair Labor Standards Act and related legislation on wages, hours, and working conditions. These legal constrictions apply to the operation of the whole institution, however small the grant received, and also to the private companies which construct campus buildings and provide major services.

Within the state, of all the outside forces operating on the public institutions, limiting their autonomy and the policy powers of their leaders, most debilitating are the new statewide coordinating boards and the state budget offices. The 19 states which now have a single statewide governing board for most or all of the public institutions should not be confused with the coordinating board. The latter is an agency normally appointed by the governor which is superimposed

over the existing governing boards of the institutions. The coordinating boards are awarded specific powers in their enabling acts, powers which are taken away from the governing boards or are new delegations of executive or legislative powers. The boards have been created primarily to control overlap and duplication of programs, to optimize the use of state funds, and to plan for the orderly development of the whole of higher education in the state. Clearly they have major policy-making roles. Super board control over the goals, functions and programs of the individual institutions may be so considerable that they are at times dictated to the institutions, yet few citizens and not many legislators know the functions of the board, or the names of the members and the executive director.

Under some of the 29 coordinating boards, the powers to plan and to approve programs have capability of finally determining the major roles and functions which each college or university may perform. The board can limit institutions to undergraduate work, reward others with masters degrees, and still others with advanced graduate degrees and research. It may change these missions from cycle to cycle in its planning. No new degree program or major, no department, school, extension center or campus may be started without the approval of the coordinating body. Beyond those tasks fundamental to the educational role of the institutions, is that of budget review. While this power is only an advisory one to the governor and legislature, its exercise may have as much effect upon the institutions as if the legislature itself had spoken. Indeed, new educational programs, new teaching-learning technologies and other innovations are almost entirely at the mercy of the coordinators. The level of funding of every new change is by board consent. It is also the board's budget formulas which often determine the institutional appropriation. Budget reviews seek out inefficiencies and means to optimize state resources. The view of the coordinators may differ markedly from those of the leaders of the institutions, and yet they will prevail more often than not, even if challenged in legislative halls.

How many of the coordinating board members or members of its staff can you name in your state? How many do the faculties and students know? How much do any of the institutional people know about the controls and circumscriptions which the coordinators may exercise over policy?

The state budget personnel are no less powerful and no more visible than those of the coordinating board. Outside of a few people in even the largest university, these bureaucrats are not only anonymous, they are conceived of as just cogs in a machine which cuts needed items out of budgets. They are faceless, without name, and without the legal responsibility for the well-being of the institutions. Nevertheless, as the state political leaders fail to see their goals of accountability and control achieved through the coordinating and the governing boards, they turn to the governor's budget office or the legislative analyst, or in some states both, in order to obtain their objectives.

Budget officers have, of course, existed for some time, but whereas earlier budget reviews singled out particular objects of expenditure for criticism (pieces of equipment, stationery, travel, etc.), the current adoption of state management information systems and program budgeting (PPBS) encourage budget analysts to deal fully and directly with the educational and research programs. Information systems furnish critical data on operations and costs which, when analyzed and applied to programs, allow budget officers to determine whether a program is "productive" (i.e., good) or not. Also unlike yesteryear, these reviewers too are professional people of quality and sophistication. Institutional leaders can no longer influence their decisions by appealing to academic freedom or the myths that have served to awe the less informed in the past.

Budgeteers, as well as state coordinators, may make critical judgments about programs, changes in the function and role of institutions and in the amount of funds which may be awarded to each and every activity. Budget reviews are already so thorough in a few states as to preclude more than a broad advisory role for governing boards or even coordinating agencies.

The coordinating boards and the state budget offices are the two most powerful outside influences on the internal operations of the institutions. Depending upon the state, several other state agencies may also have substantial influence and consequence. The state civil service systems may require all nonacademic employees to be under its control. The state building commission or department of public works may design, build and accept for the state all academic and, in some states, nonacademic buildings. Central purchasing agencies may determine the types and kinds of equipment which may be purchased.

The newest of the state agencies which could affect higher education, but has not yet made its presence felt, is the state planning office. These agencies now exist in 26 states, are closely tied in with the governor's office, and are formed to: provide research and analyses, encourage improved planning, and improve the coordination of the total program of state government. Higher education, in taking a larger and larger share of state appropriations, will hardly escape intrusion by this office as it becomes geared to use of statewide comprehensive information systems and to complementing the operations of the state budget office. Who is your state planning officer?

Lastly, for consideration under this enumeration of state agencies controlling some aspect of higher education policy, is the state scholarship and/or loan commission. Today, 20 or so states have such agencies and additional ones are created each year. The commission may have control over the distribution of a good many million dollars of state and, at times, federal funds. The agency rule-making powers allow it wide latitude for administration of the monies in such ways as to aid the private or the public institutions, or one type of institution against another (e.g., the university vs. the community college). Or it may be able to administer the funds by dealing directly with the students rather than through the institutions. As the sums of money gain magnitude, the agencies can substantially influence the rate of college-going and the flow of students into the various types of institutions.

Early in this paper I indicated that the private,

nonpublic institutions are as subject to the internal anonymous leadership as the public ones, and that if they accept state aid—directly or indirectly—they will be subject to the external controls as well. (They already accede to the federal influences equally with the publics.) As they become successful, as in New York, Pennsylvania and elsewhere, in obtaining direct state grants, they will become for state purposes, just another recipient of state tax dollars, and will in time be subjected to the same management and planning controls as the public sector. To believe that funds will be given without control is to fly in the face of the history of all governmental grants-in-aid. It is an illusion and a vain hope of the nonpublic sector that their tax funds will not receive the same searching oversight as those of the public institutions. Indeed as they accept funds, they become public, whether the funds are in large or small amounts. Hence, already having succumbed to the federal influence and to accrediting standards, it is only a matter of time, if the private colleges and universities persist and succeed in obtaining state appropriations, before they also are led by the anonymous leaders of the state bureaucracy.

Each of the many state agencies has its own legislative enabling act giving it powers and duties. Each exercises its authority without much reference to the others. Some work at divergent or cross purposes with others just as the agencies at the federal level. No coherent overall policy in relation to higher institutions or to higher education guides either the various state agencies, the myriad of federal ones, or the professional societies. The institutions are subjected to the will of each of them individually. Some of these agencies have final decision-making powers over the very heart of the educational program, others touch the university or college in less fundamental ways, but cumulatively all these agencies have powers which, collectively exercised, leave little policy discretion in the institution itself. Indeed in terms of day-to-day administration, the leaders of the institution, in responding to the many demands of these outside agencies may have little or no time to engage in long-range planning, or to provide the kind of internal leadership which the citizens, donors, and political leaders expect and demand. Presidents and their governing boards are legally charged with the task of providing high quality education to the students. But the accrediting societies, the state and the federal government have usurped their power and authority, placing it in the hands of a host of faceless civil servants and other professionals who have no direct responsibility for the institution's welfare.

In summary, the ostensible leaders of higher education, i.e., the presidents and the governing boards, are the real leaders of institutions in title and in visibility only. Internally the technical staffs limit their decision control and breadth of vision, by paring down alternatives without ever having the staff assumptions, operating objectives or technical analyses subjected to critical leadership review or direction. Externally, virtually every decision made within the institution, especially about educational program and management, is subject to review and final decision by a faceless and unknown contingent of servants belonging to a variety of private and governmental agencies.

At this moment in our history, we may be able to compensate for, or correct some of the internal problems of leadership. On the other hand, the external leaders, about whom we know so little, are very likely to assume even greater control over higher institutions. The number of professional accrediting associations continues to increase. The federal government may appropriate greater amounts of money for more purposes, including instruction, but it will also persist in pursuing through categorical means its several national objectives. The federal government is quite likely to demand increasing amounts of management information on some common bases, so that it is both compatible and comparable from one institution to another. Federal planning capabilities are likely to improve, especially if the National Institute for Education and the Foundation for Higher Education are established. As already indicated, state planning is becoming more centralized and more comprehensive.

All these factors lead to the conclusion that the real leadership roles of the president and the board are so badly eroded as to be, quite literally, gone. We need to recognize this fact and had better apprise the public and the politicians of the people and agencies who should be held accountable for major decisions on higher education considering their powers and authority as against those of the institutional leadership. Until this is done adequately, all the constituents of the university will continue to be frustrated because their great expectations for leadership in policy formulation is directed at persons who are no longer in positions to exercise it.

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[1] Earl C. Bolton and Fredric Genck, "Universities and Management," Journal of Higher Education, Ohio State University Press, April, 1971.

[2] Information from staff of the Education Commission of the States in discussion with the author.

[3] Harland G. Bloland, *Higher Education Associations in a Decentralized Educational System*, A Publication of the Center for Research and Development in Higher Education (Berkeley, 1969), p. 19.

[4] J.A. Shannon, "Voluntary Associations: Sociological Aspects," in *International Essays of the Social Sciences*, ed. by D.L. Sills (New York: Macmillan & Free Press, 1968), vol. 16.

ENROLLMENT POLICY FORMULATION

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The topic assigned to this talk—enrollment policy formulation—is deceptive. It seems straightforward. It conveys an impression of concreteness—of tractability. It suggests that enrollment policy is an object that we all apprehend and comprehend. It implies that we may take its substance and characteristics for granted. And that consequently our concern in this discussion is procedural—to explore the processes whereby this shared entity, this clearly demarcated area of educational policy, is made operational.

This is all very misleading. Enrollment policy is an elusive area of academic administration. It is difficult to get hold of. It is difficult to define satisfactorily. Its decision process—the locus of decision-making and the considerations that enter into decisions—are difficult to pin-point. Although its manifestations are everywhere, one can never be sure where it begins and ends. For instance, a college that decides to go co-educational has clearly made some kind of breakthrough in enrollment policy. Similarly, a university that increased its fees has probably also changed its enrollment policy. But such decisions say little about the essential process. The whole thing is rather like the blind man and the elephant.

The trouble is, of course, that the whole of higher education is a vast enrollment policy. And let me be quite clear that I do not intend to remake the whole of higher education this morning. As the phrase is generally understood, enrollment policy is concerned with the size and composition of the student body. And if it is policy at all, it means aspirations, aims, goals, and purposes with respect to the size and composition of the student body. One of our difficulties, however, is that everyone views these differently. The aspirations, aims, goals and purposes differ significantly at each policy-making level in a system of higher education.

The differences are perhaps most clearly discernible in the public sector of higher education. Schemes vary from state to state. But many states now have a hierarchical structure comprising the state executive and legislative branches at the top, a second level consisting of parallel segmental systems (the state university, the state four-year colleges, and the two-year community colleges), a third level consisting of the component institutions of the segments, and a fourth level comprising the component faculties of the institutions in their several programs.

State enrollment policy generally originates from some broad mandate—for example, that a place in a college or university be made available for every resident high school graduate who seeks admission. In some states, the mandate may be amplified—in Master Plans and similar documents—to include other things such as broad aims concerning provision for professional and graduate education. By various mechanisms, the mandate is translated into estimates of student demand. These are given concrete expression in the state budget in the form of resources for faculty and facilities for each segment.

The state's enrollment policy is refined and made more explicit at the level of the segmental systems. At this level, the state's general enrollment purposes are adapted to each system's sense of its educational mission. This is usually a matter of the balance between its component institutions. They are also translated into plans for the development of each system in terms of the number of component institutions, and their enrollment capacities by level of enrollment. Already at this level conflict may emerge between the educational goals of the segments and state aims with respect to enrollment capacities. The specific points of stress may vary from segment to segment. But they generally relate to issues of student body composition by level of instruction, including such matters as the percentage of graduate and non-resident students. The enrollment policy of each system is given concrete expression in its budget in the form of resources for faculty and facilities for each of its component institutions.

The policy is further refined at the level of these component institutions. At this level, the goals of the systems are adapted to each institution's sense of its educational mission. This is usually a matter of disciplinary and professional balance, including both qualitative and quantitative considerations. Stresses concerning student body composition tend to be sharper at this level. The issues usually relate to matters of aggregate enrollment demand as this impinges on the capacity of disciplinary units. The enrollment policy of the institution is given concrete expression in its budget in the form of faculties and facilities for each of its component program units.

The enrollment policy of the institution is ultimately made operational at the level of these program units. At this level, it is adapted to each faculty's sense of its educational mission. This is usually a matter of professional aspiration regarding the scope and coverage of its curriculum. Stresses at this level generally relate to resources and pedagogical standards. The enrollment policy of each faculty is given concrete expression in the curriculum, in the form of courses and classes and other modes of faculty-student relationship.

Let me draw attention to three features of this downflow of enrollment policy in the public sector: it is a continuum in which policy objectives become increasingly divergent. Its central component is a demand—capacity equation. As policy moves down the continuum, the demand side of the equation is differentiated only in gross horizontal ways until it reaches the area of policy-formulation that lies between the institution and its component programs. (By horizontal differentiation, I mean into separate demand policies for graduate, professional, upper division and lower division enrollment.) In contrast, the capacity side of the equation becomes progressively more discrete in a vertical sense at each level of the structure. This means, of course,

that at the level of the individual programs, the relationship between student demand and available places is quite uncertain. There may be, in fact, a potentially large gap between demand and supply.

The second feature of the structure is that there is a significant discrepancy between the objectives of the faculties in the individual programs, and the goals of state and system. Indeed, at this level, the goals of state and system—even those of the institution—may have as little relevance as the rumblings of barely active volcanoes.

The third feature of the structure is that the concrete expression of enrollment policy at each level is resources for faculties and facilities. The budget of each component unit enunciates its enrollment goals. And the divergences and discrepancies in the system take the form of budget issues.

Clearly, the factors influencing enrollment policy formulation differ considerably at each of the several levels of the hierarchical structure I have outlined. One cannot hope to encompass the whole complex system in a brief talk. I propose, therefore, to concentrate rather exclusively this morning on enrollment policy formulation at the level of the institution. I am making a distinction, of course—a real one in the area of enrollment policy—between the institution in its collective sense, and its component program units and faculties.

My remarks will be most directly relevant to large institutions in the public sector. From observation, however, I would guess that the problems of enrollment policy may be similar in private institutions.

My first point is that of all the agencies in the hierarchy of enrollment policy, the institution has less leverage—enjoys less freedom—than any other agency. It sits at the focal point of the squeeze between the goals of external policy and the professional and pedagogical aspirations of its program faculties. The institution has the responsibility for implementing external policy. It has the responsibility for insuring the viability—and the standards of quality—of its academic programs. But its influence on both external and internal policy is limited and indirect. It has the responsibility for reconciling incompatibilities between the horizontal structure of external demand and the vertical structure of the available program capacities. But it has little authority to force a reconciliation.

Let us consider this matter of institutional leverage in more detail:

As we have noted, the institution has an obligation to fulfill its externally-imposed enrollment mandate. It also has a responsibility to insure its long-run capability to do so. This has two aspects: first, an obligation to accomodate the aggregate student demand assigned to it as a budget responsibility. Second, an obligation to maintain the principle of educational opportunity that underlies the whole system. This means giving students the maximum freedom in their choice of curricula. But the institution also has a responsibility to sustain the overall balance of its curriculum in relation to its self-ascribed educational mission, and in relation to the operational interrelationship of the several curricula. No single student's curricular program is ever the exclusive concern of any single faculty all the time—except in a small minority of self-contained professional fields. Thus, the institution has an obligation to insure that the overall composition of the academic program provides for the educational needs of all enrolled students.

Obviously, there is a good deal of incompatibility here between the institution's externally-imposed responsibilities and its internal responsibilities. Until they actually collide, however, the institution may have little incentive to do anything about it.

In contrast, the goal of the typical faculty is, quite properly to improve its professional competence in all its assigned functions. It will also want to optimize pedagogical relationships throughout its curricula. These two objectives both point in the direction of expansion—more coverage of the field, larger teaching staffs. Also—contrary to popular belief—the faculties are typically anxious to educate students. They feel a strong sense of responsibility to facilitate their academic programs. They will accomodate all applicants for admission to their curricula if they can. This impulse reinforces their professional objectives, for enrollments strengthen their claim for additional resources. All in all, they have a considerable incentive to maximize the enrollment in their programs.

Clearly, the ambivalence of institutional objectives facilitates their doing this. What then in the structure of the organization acts to facilitate the attainment of institutional goals?

The institution is first and foremost a set of academic programs—or more properly—a set of faculties. In its overall composition, the set essentially represents a collective institutional decision—more properly, a cumulative set of decisions taken over time—as to what a balanced educational program should comprise. In its totality, it represents an institutional definition of its role and mission relative to its constituency. This definition is based on a variety of factors. Of these, academic tradition is one; society's needs with respect to certain types of trained manpower is a second; the trend of scholarship and research among successive faculties is a third; and the longer-run trends in student curricular interest is a fourth. Once we might have said that a university had faculties in the classics, in theology and in natural science because these fields comprised the curriculum of an educated person. We cannot describe the institution's overall program in such terms today, but we can say that it represents part of the curricular agenda of a literate, scientific and technological society.

But note: the agenda clearly represents a unique balance of external and internal orientations. But, it is also intrinsically inflexible and unadaptive. Faculty appointments normally involve a career commitment and—for many—tenure. Facilities are concrete and brick—and too often monuments as well. The typical program unit thus represents a long-deliberated academic decision encased in a fixed investment. Because of this, it is always in some measure out-of-date—and the overall institutional agenda even more so. Unless there is a continuous and sufficient inflow of new resources to sustain continuing expansion and changes of academic direction, its scope, emphasis and structure can be changed only slowly over time. Most institutions have

experienced just such an inflow of new resources during recent years. Not all of the changes in program content and coverage initiated in these years have represented a direct response to enrollment demand. I suggest, however, that the inflow has been sufficient and continuous enough to conceal the intrinsic inflexibility of the institutional structure and hence of its enrollment capacities.

In any event, any specifically institutional role in academic programming virtually ends with the establishment of the overall agenda.

For, as we all know, the individual academic programs are highly decentralized in operation. Notwithstanding the common external belief—and the internal design—the institution is not a neat and tidy organization after the model of a public utility, with all its parts properly integrated one with another, so that the whole enterprise as a single entity can be made responsive to central directive. To the contrary, it is a congeries of individual and autonomous jurisdictions whose binding ties are little more than a heterogeneous set of academic policies, administrative procedures and traditional mores. In some instances, there may even be an academic plan. Notwithstanding the institutional origin of the overall program set, these jurisdictions operate as a set of relatively discrete curricula, faculties and facilities. The faculties use the facilities to make the curricula available to student learners through a variety of courses, classes, seminars, tutorials, laboratories and other forms of student-faculty relationship. They have virtual autonomy in the design of the curricula and in the assignment of curricular resources. Indeed, in the areas of academic operations and enrollment administration, the organizational structure tends to be a substantiation of Clark Kerr's dictum that the institution is a collection of entrepreneurs united by a parking lot. It also tends to confirm Mario Savio's assertion that the institutional administration exists to keep the sidewalks clean.

Because of this faculty autonomy, the enrollment policies of the institution have little influence on the eventual size or academic composition of the student body, except insofar as the resource dispositions it makes in its budget define enrollment capacities of individual courses and classes. But, of course, the budget disposition of these resources is usually little more than somebody's best guess of yesterday as to what enrollment demands might be today. And the enrollment accomodations made today will be the basis of estimates concerning tomorrow's enrollment needs in the next round of resource allocations. The operational disposition of the resources is effectively at the discretion of the faculties. Thus, the effective short-run and long-run enrollment policy of the institution is formulated in a decentralized assignment of enrollment capacities at the level of the individual faculties. It is a process, moreover, that on the face of things may accord higher priority to enrollment accommodations than to educational objectives.

It is clear from this that the institution and its component academic units are in considerable juxtaposition. On the one hand, the institution has incompatible objectives. Internally, they are expressed in relatively inflexible resources. The organizational structure does little to facilitate their implementation. On the other hand, the objectives of the program faculties are insular and professional. They tend to work against the internal objectives of the institution. And the organizational structure isolates them from institutional concerns, and facilitates their pursuit of their local goals.

Consider now the enrollment process through which the conflicting aspirations are resolved.

As I have noted, the institution is given its enrollment policy from outside. By mechanism which need not concern us at this point, the principles underlying its public mandate are translated into an admissions policy. Its specific enrollment goals are translated into resources in the form of faculties and facilities. If its aggregate capacity is below the admissible demand, an overall numerical limitation may be imposed at that point. But this will be a horizontal limit. The admissions policy, like the pricing policy of a commercial enterprise, acts to select out from the general mass of consumers defined by public policy, the clientele appropriate to the institution. But once the students have been admitted, the enrollment process takes over to adapt that clientele to the available resources in mutually compatible ways. This process of adaptation takes place at the level of the individual program units.

We have noted that the program structure of the institution consists of a various assemblage of courses, classes, laboratories, seminars, tutorials, and other forms of instructional relationships. If we may view this assemblage as a matrix throughout which enrolling students are distributed, then clearly for a given set of resources, there is an enrollment capacity for each cell.

More properly perhaps, there is an optimal capacity, and a limit of capacity beyond which the pedagogical relationships incorporated in the cell become professionally unacceptable. There is some elasticity in the matrix, represented by an ad hoc ability to add new cells in the form of additional courses, sections, laboratories, etc. or to expand existing cells by transferring an offering to larger facilities. The ability to do this is greatly increased when resources are growing. But, subject to this elasticity, the sum of the cellular limits for each program represents the enrollment limit of the institution. Or, in other words, the enrollment capacity of the institution is the sum of its program capacities.

It is no great intellectual breakthrough to demonstrate that the whole is the sum of its parts. But it may be an administrative breakthrough of sorts. For I think it is true to say that for most institutions, neither their external enrollment mandate nor the admissions policies and procedures which implement it, recognize that the institution is a relatively infelxible matrix of differentiated enrollment capacities. To the contrary, both in the public conception and in the public enrollment policies which effectuate it, the institution tends to be viewed as an all-purpose receptacle for undifferentiated enrollments. Every incoming undergraduate student has a disciplinary destination, and a curricular route for reaching that destination. However, the student's academic characteristics are not normally reviewed until after he or she has been admitted. For new freshmen, they may not even be clearly articulated until the junior year. Graduate students, of course, are admitted according to field of study,

but generally by a process that is isolated from—an oblivious of—the programmatic distribution of undergraduate enrollments.

Thus, for most public institutions, there is a hiatus—virtually a leap in the dark—between the process whereby they establish their enrollment limits (through the resource assemblages and assignments that form the basis of their matrix of courses, classes, etc.) and the process whereby these limits are effectuated. And in this hiatus, the whole ceases to be the sum of its parts. An institutional limit may represent the sum of a set of vertical program capacities arrived at on a basis of desirable educational balance, effective pedagogical relationships, efficient facilities utilization, or some serviceable combination of all of these. But, from the moment that the floodgates are opened to new student admissions, this institutional limit becomes an undifferentiated—a horizontal—enrollment capacity. And the distribution of the total enrollment throughout the programs of the institution tends to become a somewhat haphazard process of adapting student interests to courses, classes, and professors, and conversely of adapting professors, classes, and courses to random pockets of student demand. Unless, by chance, the distribution of the student's curricular interests matches the disposition of curricular resources throughout the program, this adaptation will be accomplished only by exploiting the elasticities of the system—perhaps to excess. In some instances, because of expansionist faculty motivations, it may involve the sacrifice of the curricular and pedagogical relationships which were its original basis. Except in those institutions that employ pre-enrollment procedures, the process may be as colorful as a North African market—and its economics may be as pure. In any event, the result is that the size and academic composition of the student body is determined rather randomly between the logistical adaptations made by individual faculties and the sometimes uncertain and unsystematic programmatic demands of students as they grope their way towards a sense of their academic purposes. The result is usually actual enrollments that differ appreciably from the budgeted capacities of the programs. Indeed, a variety of enrollment practices and capacities may be effectuated that are incompatible with the overall objectives of the institution. And, insofar as these establish a base for the next round of resource allocations and curricular arrangements, they may be perpetuated as institutionalized modifications of these objectives, and of the institution's educational standards.

The heart of the matter is the match—or lack of it—between the distribution of curricular interests among the student body, and the disposition of curricular resources throughout the educational program. I need hardly say that a poor match poses a number of problems for an institution. In the short-run, it means practical difficulties in shifting resources to provide for emergency situations in the areas of greatest pressure. In the longer-run, it may mean a progressive imbalance in the educational program, with some fields and units becoming increasingly over-extended, and others increasingly under-utilized. Such lopsidedness may be both vertical and horizontal. Because of the generally poor coordination between the graduate and undergraduate admissions processes, the result may well be enrollments at both levels that exceed the pedagogical capabilities of the faculties concerned, notwithstanding the elasticities of the system. The consequences may be a dilution of educational standards at both levels—or—more frequently—a diversion of resources from the undergraduate to the graduate program. At the undergraduate level, a heavy concentration of major students in a particular curriculum may induce service burdens on related faculties which are incompatible with the responsibilities imposed by their own major students. In some instances, service obligations may assume larger proportions than even the curricular requirements of the major. Over an extended period of time, moreover, fields of undergraduate major concentration that happen also to have significant service responsibilities, and which tend to attract significant numbers of non-major students in elective offerings, may have to be expanded beyond tolerable levels. Institutional researchers who have studied the dynamics of departmental operations will agree that there is a limit of faculty size beyond which the unit becomes increasingly unmanageable.

The primary responsibility of an institution of higher education is to serve the students it enrolls. This means making a maximum effort to accommodate them in the curricula of their choice. But it has other responsibilities, too. It has a responsibility to maintain the viability of its programs, which may mean restricting the size of departmental faculties within a manageable limit. It has a responsibility to insure that the educational experience of all enrolled students is of requisite institutional quality which may mean limiting enrollments in some programs to maintain pedagogical standards, and to insure that related programs are adequately serviced. It also has a responsibility to its overall agenda, which may mean supporting areas of low enrollment demand, particularly in new, emerging and esoteric fields of study. Clearly, these latter responsibilities are incompatible with a concept of the institution as a receptacle of undifferentiated enrollment aspirations.

During the past decade, student curricular interests have demonstrated considerable instability. They have shifted, first to the sciences, following Sputnik, then—heavily—to the humanities and social sciences.. This trend seems now to be ebbing. There is some evidence that the least strongly motivated students may be influenced in their curricular choice by adventitious factors. It seems, too, that the distribution of curricular interests among students who succeed may differ from that of entering students. For those reasons, the trend of student interests as it is expressed in the demand for places in courses and classes may by poor indicators of longer-run interests.

For upwards of fifteen years, the public institutions have been able to close their eyes to the incompatibility of their several responsibilities. During these years, they have been struggling to keep abreast of a tidal wave of student demand. As enrollments have increased, resources have typically increased in step. As a result, they have generally been able to adapt their programs to the demand, despite its fluctuations and instabilities, without serious cost in educational values. But the process has generally involved following the trends of student interest with ex post facto resource

increments, and stretching elasticities in the meantime. Some temporary pedagogic ghettoes may have been created as a result. Throughout the period, moreover, enrollment planning has been mainly a matter of estimating and projecting how much of the anticipated demand the institution might have to accommodate in aggregate categories from year to year without regard to longer-run consequences. Growth may have tended to obscure the intrinsic inflexibilities of the institutional structure.

But growth has to end eventually. It may end, as concerns both enrollments and resources, as a consequence of attaining an enrollment ceiling that has been pre-determined as a matter of institutional policy. For many institutions, however, the long-accustomed growth of resources appears to be ending abruptly now—or at least slowing appreciably—while the growth of enrollment demand continues. Under either eventuality, the elasticities in the system may soon shrivel up. When this happens, the institution's ability to deploy resources in response to bulges of student curricular preference is significantly reduced. The result may be serious educational stress—and dislocation of student programs—unless the institution's enrollment policy can deal effectively with the situation.

I said earlier that if it is policy at all, enrollment policy is concerned with aspirations, aims, goals, and purposes regarding the size and composition of the student body. These are not synonyms, however. There is a difference between aspiration and purpose. There is a difference between an institutional enrollment policy that enunciates an aspiration to accommodate a student body of a certain size and composition, and an institutional enrollment policy that states a purpose to do so. The former case is a matter of hoping, extrapolating and keeping one's fingers crossed. Admissions policy effectively becomes the whole of enrollment policy after the goals have been set. The latter case is a matter of proposing, determining and effectuating. Admissions policy becomes the instrument of enrollment policy.

In this latter case, institutional enrollment policy becomes a matter of enunciating and effectuating purposeful institutional goals with respect to the size and composition of its student body. Or, in other words, a matter of purposefully defining, delineating and adapting the size and composition of the student body to its educational objectives. I stress the word "adapting."

When growth ends—when resources level-off—when the institution is in its steady-state with all its inflexibilities made manifest, I suggest that it has little alternative but to move to this latter mode of enrollment policy.

Under steady-state conditions, the goal of the institution changes. Under growth conditions, it has been primarily concerned with accommodating enrollment demand and acquiring new resources for the purpose. It now is concerned to maintain its educational standards through an optimal deployment of stable resources—sometimes even declining resources. Clearly, the time-honored tradition of adapting curricula to student demand cannot survive in such circumstances. It has to be discarded in favor of policies which will adapt the students to the capacities of the individual curricular programs. Inescapably, this means establishing—and implementing—an enrollment ceiling for each level of instruction within each program that is consistent with its curricular capacity. Equally inescapable, it means controlling the inflow of new students at each level of instruction within each program in ways that will insure that the enrollment ceiling is observed. Quotas are unpopular in any area of academic administration. They are the ineluctable instrument of purposeful enrollment policy, however.

I said at the beginning that one never can be sure where enrollment policy begins and ends. This is as true of purposeful policy as of any other. But it involves a different kind of complexity.

The act of determining programmatic or disciplinary enrollment ceilings at once raises the question of the appropriate balance between enrollment responsibilities and resource capabilities for each program or discipline. In turn, this raises the question of the appropriate disposition of these capabilities among the several phases of each program or discipline. And, in turn, this raises the question of dimensions and trend of the external and internal enrollment demands to which each phase of each program or discipline should be responsive.

Presumably, the overriding objective of the institution under steady-state conditions should be a satisfactory reconciliation of the goals of public policy and its own educational aspirations. Put simply, this means that over time it will want to keep the disposition of its curricular capacities in reasonable conformity with the composition of the external demand created by public policy. To do this, it may be obliged to incorporate the process of enrollment policy formulation in a form of academic planning which makes both the institution's budget and its admissions procedures its instruments. The pivotal aim of this type of planning should be to keep the institution in all its parts—and as a total program—adaptive over time to the changing requirements of public policy.

This kind of planning starts with what I have termed the curricular agenda of the institution. It establishes planning mechanism to insure that this agenda is continuously monitored in order that needed shifts in emphasis and changes of direction are identified and initiated. It establishes budgetary mechanisms to provide sufficient flexibility in its resource base to enable it to adapt its programs reasonably promptly to these shifts and changes. For each program, it establishes a limit of enrollment capacity and a resource base that represents an optimal match between responsibilities and educational capability for that program. In conformity with its overall plan, it provides for changes over time in the parameters governing this match. Similarly, it provides for changes over time in the admissions quotas that effectuate enrollment limits.

This is a fairly large prescription. I believe, however, that some form of enrollment policy along these lines will be necessary if the public institutions are to survive the current financial depression without loss of educational quality.

THE DEAN AND ACADEMIC POLICY FORMULATION

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Institutional research has come of age largely because administrators have become increasingly aware that most of the judgments that they are called upon to make must be made on the basis of incomplete and inadequate information. This is particularly true of an academic dean in a university setting. All too often there are few clearly stated and implementable institutional objectives (a casual perusal of the stated objectives as they appear in the university catalogs will document this). And on the other hand, academic deans are faced with day-to-day decisions that should, in theory, be individually weighed against institutional objectives, but which, in fact, are more often hunches than they are calculated responses.

Consequently I speak with great pleasure to you as institutional researchers, because I personally am very much aware that without your understanding and help in the years ahead, the task of the academic dean will become an impossible responsibility.

Consider for a moment the diverse scope of decision-making that is the responsibility of a dean in a contemporary university. First of all, the dean is perhaps more than any other administrative officer neither fish nor fowl—to the central administration he must think and respond like a faculty member; to the faculty he appears not to be and is in fact not a faculty member, but rather an administrator. Less this be construed as a pathetic appeal for sympathy, let me refresh your mind as to some of the subjects of academic stories that are tied to the deanship:

1) The old story about the dean's job—that he should make the school twice as good as the students think it is and half as good as the president says it is; or
2) In the academic hierarchy, the task of the faculty is to think—the task of the president is to make speeches—and the task of the dean is to keep the president from thinking and the faculty from making speeches.
3) Or consider the dean who hoped he could die while he was in an unpleasant faculty meeting, because he was sure that he then would not notice the transition;
4) Or the story about the dean who became ill and found himself in the hospital. The assistant dean chaired the faculty meeting for that date and returned to the hospital that evening and informed the dean that the faculty meeting had been held, a resolution had been introduced that wished for the dean a speedy recovery. The assistant dean informed the dean that the resolution had been passed 210 to 209!

There are other profound misgivings regarding the role of the dean. For example, who was Rector Magnificas of the University of Paris when Abelard was teaching there? Who was dean at Oxford when Newman was preaching at St. Mary's? Or more recently, who was dean at the University of Chicago when Fermi pulled the rod out of the uranium pile and ushered in the birth of the new world?

The first point that I would like to make is that deans never have been, are not now, and will not be in the future, the stars of the show. The most that a good dean can hope to contribute is the initiative and the persuasion that can lead both the central administration and the faculty into the kind of coordinated effort that will allow for some definition regarding objectives and goals; but perhaps more important, a good dean will spend most of his hours, most of his effort, in attempting to make intelligent day-to-day decisions that are true to the corporate mission of the larger institution. And it is to this task that both the dean and the institutional researchers must combine forces if any success is to be realized.

A considerable gap exists between faculty members who are normally suspicious of administration, and administrators who attempt to efficiently allocate resources.

One basic problem is that in most institutions, the relationships between institutional research and the academic dean are indirect and awkward. I have no facts to document this but my considered guess would be that most institutional research offices report directly to the president. By virtue of this structure, the office of institutional research becomes suspect in the eyes of the faculty. Most deans are never sure of the extent that they can utilize the resources of institutional research, as there is no direct relationship between the two offices. This may be a small item in the thinking of some people, but among academic deans it is an item of no small dimension.

Most deans are dealing with information that they have received from a multitude of sources since, whether we like it or not, almost every office on the campus is informally engaged in institutional research. Unfortunately, because of limited involvement and because of inadequate data gathering devices, most of the information that comes to the dean from these many sources is inaccurate or so fragmented that it is nearly useless. This simply underscores the fact, that until institutional research is given greater visibility on the campus, and until considerably more coordination of effort is effected, redundancy, inaccuracy and duplication of effort will be more the rule than the exception.

A primary responsibility of the dean in the dilemma is to attempt to give visibility and responsibility to institutional research. The dean must interpret to the faculty the nature of the institutional research function. Unless the dean believes this office is important and uses this office, he cannot convince the faculty of its importance. By the same token, I believe most offices of institutional research must adopt a policy of doing more than just being willing to provide answers to questions that are formulated by the

dean. They must assume initiative, whether initially this is misunderstood or not, in assisting the dean in formulating the right questions. Only a person who is completely conversant with the potential of enlightened institutional research can possibly even begin to interpret to a less informed person, the consequences and results that such research can bring to pass. And I submit to you that far too often institutional researchers have been willing to sit in their offices and wait for someone to come to them to ask questions that are often in the final analysis not the questions that should be asked.

Institutional research has assumed considerably greater importance on most campuses in the past 18 months to two years—not because the researchers have become more aggressive, not because more equipment has been made available, not because techniques have become more sophisticated, but rather because financial support to the institution has become considerably more restrained. In addition some institutional research budgets are also being cut, which suggests that institutional research is not always perceived as capable of shedding light on the question of how best to allocate resources. And suddenly administrators, faculty, students, to say nothing of boards of trustees, regents, etc., have become very interested in introspection. Questions such as, "How can we do a better job with existing resources," are questions which are being asked—rather than, "How can we go out and find more money to fund expanding and already cumbersome and expensive programs?" The only people with the expertise to deal with the question of how to do a better job with existing resources are in the first instance the institutional researchers. Every responsible office of institutional research ought to be geared to answer the question, "What happens if this particular policy decision is implemented?" And it is becoming increasingly obvious that this question must be considered in a way that asks, "What happens *educationally* if this particular policy decision is made, as well as what happens economically if the decision is made?" In other words, we need to know what is educationally valuable.

It is only when this kind of answer can be rapidly forthcoming that the academic dean or any other administrative officer is going to be in a position to give the kind of effective leadership that is going to allow that institution to, first, survive and second, prosper and be accountable.

And this is my third point, that institutional researchers must be oriented to the future and can no longer afford the comparative luxury of confining themselves to the data-gathering function. My primary problem as an academic dean is that I am belabored and inundated by day-to-day action decisions that make long-range policy formation awkward, if not impossible. And it becomes incumbent upon me, as I believe it becomes incumbent on the office of institutional research, to find the time and the money and the commitment that will allow us to move toward a posture of policy establishment as a prerequisite to action for day-to-day decisions.

We recently underwent an interesting academic exercise that might be of interest to you. The National Endowment for the Humanities awarded the University of Denver $1,200,000 for a new program in the Humanities. Most of the work of preparing this proposal was done by department chairmen in the Humanities, along with representatives from my office. We woke up one morning in March and, to our utter amazement, we had $1,200,000 and a mandate to implement a program in September 1971—some 5 months hence. We realized that while we had the money and the theory and the interest and the commitment, we were not in possession of the facts that would allow us to implement this program effectively as circumstances are going to demand. And here I must say *mea culpa, mea maxima culpa.* Institutional researchers should have been in on every meeting from the time we received information that such an agency existed, until the moment that the grant was received. But again, a large part of this difficulty occurred because here, as in far too many other institutions, institutional research is viewed as (a) an appendage serving the office of the president primarily; (b) a group that is approached after-the-fact, rather than during the process, and (c) a group that is interested more in statistics than in programs.

In my judgment, the future of higher education as a dominant force in American society is in considerable jeopardy. Both the dean and the office of institutional research should be involved in the long point of view. They must resist being overwhelmed by the pressures of the immediate and the need for balancing the budget, and for providing parking for students and faculty. Both these offices must resist succumbing to the tyranny of the routine or the black pressure of utilitarianism. The future strength and welfare of our institutions will depend in increasing measure on the cooperativeness, thoughtfulness, wisdom, and vision of the two sources. We are engaged in the greatest educational experiment that the world has ever known; there are more men and women in college and universities than at any time in history. Decisions are daily being made that could be infinitely better if the dean would be open enough and secure enough to turn to the institutional research office and say, in effect, "What facts, what ideas do you have that will help me make better decisions?" And by the same token, the office of institutional research must be far more vocal, far more aggressive, and far more flexible in the discharge of its responsibilities; particularly in the area of mature management, than in the past. It is to this end I would hope that we might corporately address ourselves.

THE RELATIONSHIP OF INSTITUTIONAL RESEARCH TO GENERAL ISSUES OF POLICY FORMULATION

THE ROLE OF INSTITUTIONAL RESEARCH IN SUPPORT OF POLICY FORMULATION

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A PROPOSED THEORY OF THE ROLE OF INSTITUTIONAL RESEARCH

The specific role of any office of institutional research (OIR) in support of university policy formulation depends on the institution and the particular situation under review. Thus, to discuss the topic in general it is necessary to posit a model of the university policy formulation process which is not dependent on institutional factors nor on any particular policy formulating mechanism. For this purpose the following model of the policy formulation process is offered:

1. Recognition of situations requiring action by policy formulators.
2. Explicit formulation of problems.
3. Development of alternative solutions including (a) actions required and (b) consequences of implementation.
4. Presentation of alternative solutions.
5. Understanding of solutions and acceptance of one of the alternatives.

The role of the OIR will be described in the context of the five elements or steps of the proposed model. In order to structure the discussion of this role which varies over a wide spectrum of activities, two methods or styles of operation are described. These are the active and the passive modes.

Passive Mode: Statistical Data Collection

While operating in the passive mode, the OIR participates primarily in step 3 of the policy formulation process. This mode is characterized by the following two types of functions:

1. Provision of specific statistical data on request. Except for the expertise necessary to gather and present these data, there is no professional nor intellectual contribution to the process.
2. Solution of specific problems using an algorithm given by policy formulators.

In this mode the OIR operates essentially as a human computer terminal. Although not glamorous, these jobs are necessary and often support important policy formulation. Beyond this, successful operation in this mode builds confidence of policy formulators in the OIR, gives analysts experience in dealing with policy formulators and their problems, and leads eventually to greater involvement in the process. Without the confidence of policy formulators, full potential of the OIR will not be developed, results of studies will not have the influence they should, and the university will not benefit from its investment in the office.

Active Mode: Professional Participation

The active mode of IR operation is more challenging. It is characterized by the OIR's successful anticipation of information required and of problems for which it will be asked to supply alternative solutions for consideration of policy formulators. Administration in higher education is usually a slow, consensus-seeking process, and IR can make this process more efficient by preparing beforehand to meet the informational needs of decision-makers. Operating in this mode, the OIR can have considerable influence in development of university policy. It can successfully operate this way only with the confidence of policy formulators, which will be maintained if the OIR conceives its role as being not one of policy formulation but one of assisting policy-makers —who must accept accountability for their decisions—to come quickly and assuredly to their conclusions. The OIR must be sensitive to informational needs of policy formulators but must remain neutral in the final decision. If recommendations are sought, the advantages and disadvantages should be given with detachment, and any stated preference for alternatives must be seen to be based clearly on the evidence given. The final decision must never be the OIR's, because the office's undisputed impartiality is one of its greatest assets. The distinction between anticipating the policy formulators' needs for assistance and predetermining their decisions cannot be over-emphasized. The role of the OIR described here is based on the assumption that any degree of anticipation of any or all of the steps in the model is legitimate as long as it does not limit the judgment of decision-makers. The purpose of anticipation is to provide these people with the best information, prospect and tools so that their time and talents can most effectively be brought to bear on decisions that have to be made.

One can consider several levels or degrees of intensity of the active mode. Each step in the escalation is worth studying because it sheds more light on different aspects of the complex role of OIR in the context of policy formulation.

Active Mode, Level 1: Anticipation of Informational Needs

This level is the active counterpart of the passive mode. Operating in this level, the OIR provides statistical and other information not so much on request, but following anticipation (perhaps implicitly) of steps 1 through 3 of the model. This implies that OIR personnel are aware of the problem to be solved, understand sensitive issues involved, and can determine important variables before an explicit request is received. The office is thus ready to provide background

information which may be useful to policy formulators at the first stages of the model.

Active Mode, Level 2: Systems Initiation

This level also involves anticipation of steps in the model but differs from Level 1 in that anticipation may not be relevant to a specific situation but rather to a class or category of problems. This is often an awkward level of operation because it involves initiatives on the part of the office which may not seem important to many other people. However, because it is involved in many facets of central university administration, the need for policy considerations may become evident to the OIR before the need is generally recognized. That is, step 1 of the model for a particular problem or whole area of concern is anticipated. In attempting to prepare for the remaining steps, the OIR sometimes finds that required information is not available. Under such circumstances it may elect to initiate development of the necessary systems to insure that the information is ready when needed. Depending upon the nature of required information and the extent of the new systems development program, consequences will vary considerably.

The OIR, obviously, should not take these initiatives without full support of the president and principal administrative officers primarily concerned. These initiatives may focus attention on need for policy in certain areas, and to this extent the OIR may seem to overstep its supportive role. However, if the principal administrative officers are fully involved, it becomes their priority decision when and if systems should be developed. If possible, the office should not become involved in the design, development, and implementation of the new systems, especially if other departments on campus can do the job. However, in many cases, it will be difficult for the OIR to stay aloof from the execution of an idea it initiated. In general, involvement beyond assisting with systems' specifications or acting as consultants to the departments charged with systems development should be avoided. Greater involvement may give the OIR vested interests in some aspect of university operations, siphon off its resources from areas of more legitimate concern, and lead to the possibility of tensions developing between the office and the operating department concerned.

An example of the sort of activities described above is the following, which may be typical of newer, rapidly growing universities. The OIR senses that space utilization policies which served well when the university was small will need review as it matures and as capital funds become more difficult to obtain. A cursory examination of existing space inventory information shows that it is not current; no information on design function, use, or control department is available; classroom and laboratory spaces are described only in terms of area. The file is not computerized and for the most part has not been reviewed since the buildings were accepted from the architect, although some effort has been made to update building drawings annually. A further examination of the university's timetable file indicates that this automated system is used only for pre-semester scheduling and is not maintained after classes begin.

This example illustrates an important reason why this level of OIR operation occurs as often as it does. The space inventory file was not current and lacked detail because there was no control function which required this information. The file suited the purposes of the campus architect and the department responsible for buildings and grounds. Similarly, the university timetable file was designed, implemented and maintained by the central scheduling department, whose main concern is to find a room for every class. Thus the information required for normal day-to-day operation was available but not that needed for the management functions of analysis and planning.

What, if any, initiatives should the OIR take? Clearly, talking to the heads of operating departments is not likely to be productive. The systems are working for them, and even if they had funds to modify them they are not likely to risk the disruption. Thus the OIR can either ignore the situation or bring it to the president. If the president agrees that the space utilization data are important, there is a mammoth task ahead. A space inventory system—from data element definitions to data maintenance system design and implementation to software for manipulation and retrieval of the data—must be brought into existence. The university timetable file must be maintained current and made compatible with the space inventory file. Since the OIR had the need and resources to recognize and define the problem, it is likely that a void has been found in the university's administrative structure which it may be asked to fill. The concomitant dangers to the internal OIR operation and relations with operating departments are real and sometimes seem inevitable when the OIR operates at this level and therefore should be matters of constant vigilance to the director.

Active Mode, Level 3: Management Tools and Techniques

Operating in this level, the OIR must exercise an even keener sense of anticipation of the steps in the model. The tacit assumption in the previous levels is that if the office were able to provide necessary data, policy formulators would be able to use it to assist them in their decisions. However, universities are complicated organizations and the policy decisions to be taken are as difficult as in any organization. Also, university policy formulators are usually professional scholars and teachers, and amateur managers. Thus the role of the OIR in this level is to suggest to policy formulators, as the opportunity arises, that new tools and techniques may prove useful in solving certain problems. Since these new methods may not be familiar to them, the OIR may have to instruct the decision-makers in their potential and use. As in Level 2, the consequences of such initiatives are best understood by the senior administrative officer in the area under review; and thus discussions of this sort should not be started without his full support.

This challenging aspect of the role of IR follows from new notions that internal university policy formulation must be accomplished more logically, and less politically. The system for effective university policy formulation consists of decision-makers who understand both the university and modern management techniques and who are directly

supported by analysts, backed up by an information system capable of supplying management information. These notions, although counter to many traditions of university administration, are viable today because of a new atmosphere permeating the institutions. Recent concern of government and university administrators over the quickening rate of increase in higher education costs and widespread questioning of the value, form and purpose of higher education has had a noticeable effect on the attitude of people in the institution with respect to university planning and management. Enormous theoretical and practical questions persist. It remains to be shown, for example, whether the output of the educational process can be quantified. Also, the contributions to that output made by classroom instruction, research, new buildings, a good library, huge computers, and high faculty salaries have not been demonstrated. Still, many educators have come to the position, widely held outside the institutions, that modern management techniques must be adapted to the university organization. The new atmosphere has been inculcated in part by the action of governments and their agencies, and many feel that responsibility for internal decision-making, already greatly eroded in recent years, will be further lost if universities do not take steps to govern themselves by the best possible means.

As an example of operation at Level 3, suppose that, with support of the financial vice-president, the OIR suggests that planning, programming, budgeting be introduced; and as a baseline for budget planning and policy deliberations, a program cost study be carried out to provide historical information on how the university allocates its resources to university programs. The policy formulators will have to be instructed in the cost study methodology and helped to appreciate the PPB method. Perhaps the single most difficult task will be to convince people, before the fact, that the new method has merit and that the traditional approach has serious weaknesses from the point of view of planning and policy formulation. This situation illustrates a supportive role different from those described earlier. The OIR is taking the initiative in suggesting the important variables in the decision process—in fact, the whole context within which important policy decisions will be made. It says, for instance in this example, that departmental line-item expenditures which heretofore have been fiercely debated are not important to policy formulation. Attention should be paid instead to how much of each university resource is used to produce graduates and to do research.

The Interface

There is an important but often neglected aspect of the role of IR in policy formulation which is relevant to both modes of operation. The role in question is one of providing support at ateps 2 and 4 of the model—that is, of assisting in the definitive formation of specific questions to which policy formulators seek answers and then presenting answers or alternative solutions to them in a way that makes the information most useful. Figure 1 illustrates the support role cycle.

Unless there are good two-way communications between the person with the problem and the problem solver, a satisfactory solution is not likely to result. The OIR must develop the knack and skills of insuring that the questioners have stated their request for information unambiguously and in a way that will yield them precisely the required information if the request is exactly met. If the information or alternative solutions are not effectively presented, much of the work of the OIR can be lost. People in the OIR may have to develop new skills—essentially teaching skills, including the use of several media—in successfully developing this interface.

A RECENT CANADIAN EXPERIENCE

The University of Calgary is a large, new university which has experienced a near doubling in full-time student enrollment in the past four years. It has a full range of professional schools and offers the doctorate in most departments. Two years ago the university policy formulation mechanism was revised. As an integral part of the new structure, an Office of Institutional Research was established. Terms of reference of the new office were explicitly set out to mesh with other elements in the new structure. Internal organization of the office was designed to meet precisely the informational demands of other elements in the policy formulation structure shown in Figure 2. The essential

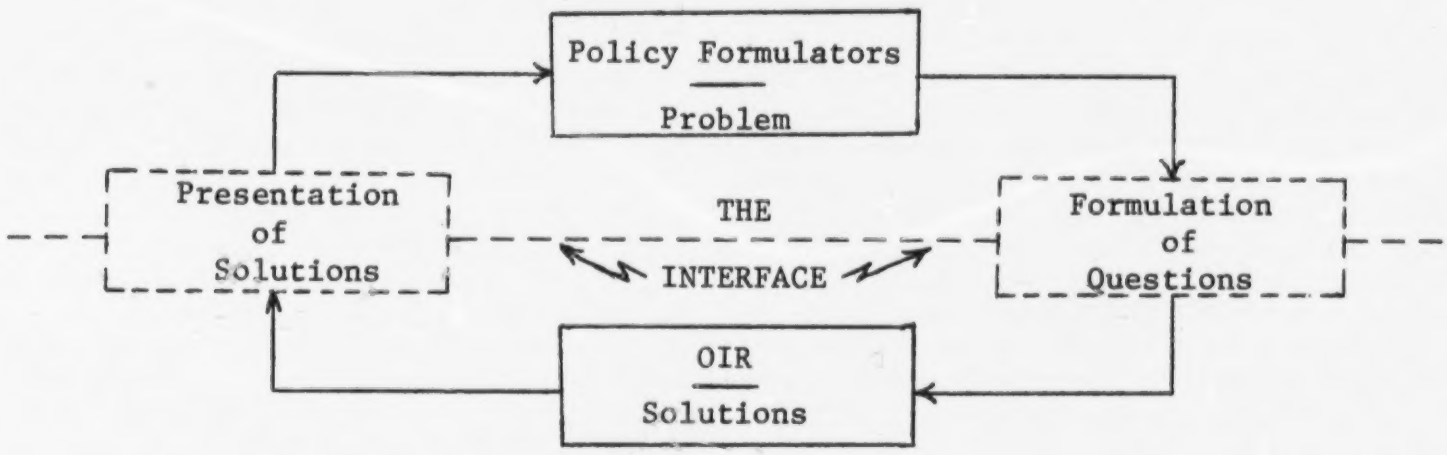

Figure 1. The Support Role Cycle

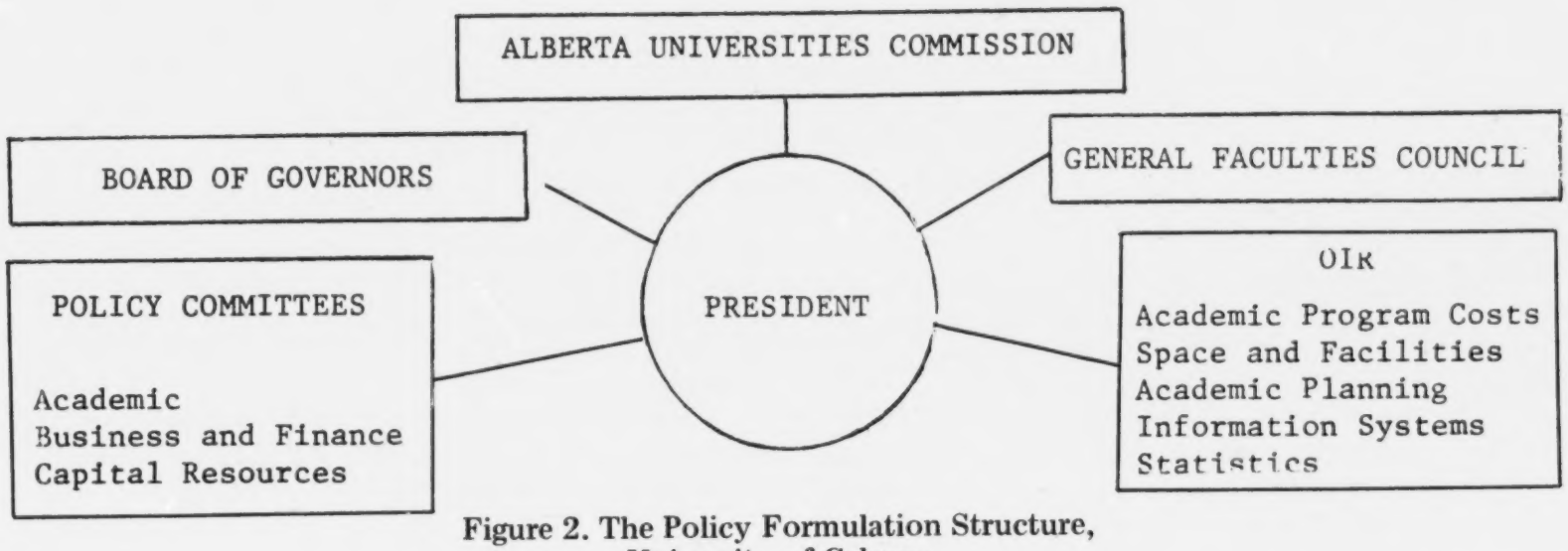

Figure 2. The Policy Formulation Structure, University of Calgary

elements in the policy formulation structure are Policy Committees. The Academic Policy Committee, Business and Finance Policy Committee, and Capital Resources Policy Committee are responsible for formulating and recommending policy in their respective areas. The Policy Committees have no executive authority but make recommendations to the President, Board of Governors, and General Faculties Council. The General Faculties Council is the senior academic body in the university. Membership on each Policy Committee includes two members of the Board of Governors, six members of the General Faculties Council, two students, the President, and the Chairman of the Board. The appropriate Vice-President serves as executive officer for each committee, and the Academic Secretary is the Secretary for all the Committees. The Director of Institutional Research is a nonvoting member of each Committee and of the General Faculties Council. The Alberta Universities Commission is the intermediary body between the universities and the Government of Alberta.

The Director of the Office of Institutional Research reports to the President. The primary role of the OIR is to provide the President and the policy committees with data, information, reports, and answers to "what if" questions. Reports from the OIR contain no opinions nor recommendations on policy matters. However, the office has a secondary role of adapting modern management techniques to university administration, and reports have contained recommendations on these topics. The OIR has no formal academic responsibilities. Nonetheless, analysts are members of the nonteaching academic staff and are encouraged to make contributions to institutional research and their own fields through publication and other services. By working with all groups to the limit of its resources and by not being located in the administration building, the office attempts not to be identified with the administration, faculty, or students.

The office consists of a director and five professional analysts, one in each of the specialties shown in Figure 2. This group is supported by four assistant analysts who are qualified by degrees and experience in their fields. Operationally, the group works as a team on each project with the analyst principally involved acting as project leader. Staff members were selected to ensure that the office could operate at each mode and level described earlier. Efforts have been made to keep the staff as small as possible in order to facilitate communication and cooperation among the analysts. The addition of analytical staff members to the offices of senior university administrators has been encouraged to forestall OIR involvement in the day-to-day concerns of senior administrators and to allow it to adopt the role of "in-house" consultant. The University's communications media center regularly assists with presentations to committees.

By both design and demand, the OIR initially concentrated its efforts on those areas where quantification was easiest. This has provided the office with experience while allowing time to build up its own internal procedures. An automated space file and the associated maintenance and retrieval systems, a detailed program cost study and a university inventory of information systems and needs are all in various stages of completion. The production of an annual fact book has proven very useful both internally to the office and to the University generally.

In the initial design of the University's policy formulation mechanism, much attention was paid to the relationship between the Office of Institutional Research and the other elements in the new structure. Unfortunately, insufficient attention was paid to the relationship between the OIR and the various university operating departments. Thus, some initial difficulties in gaining the confidence of these departments were experienced. However, good working relationships have now been established through a conscious effort toward keeping these departments informed of OIR actions and by meaningfully involving them at the earliest possible stage of OIR projects related to their areas of responsibility. Relationships with academic departments and senior administrative offices have been excellent, and considerable support and encouragement has been received from these groups. Thus, with the exception of more spade work with the operating departments, the past two years' experience would indicate that the original plans for the OIR were sound and the prognosis for its continued useful existence in this framework is good.

INSTITUTIONAL RESEARCH AND ACADEMIC POLICY FORMULATION

Herbert Heldman

Taylor, Lieberfeld and Heldman, Inc.

INTRODUCTION

The subject of this paper is the relationship between institutional research and academic policy formulation. As a point of departure, the following operational definitions are offered as terms of reference for this discussion.

> "Institutional research consists of data collection, analyses, reporting and related staff work designed to facilitate operations and decision-making within institutions of higher education."[1]
>
> Academic policy formulation consists of establishing guidelines with respect to the quantitative and qualitative aspects of both the formal and informal organization of the academic experience of students within an educational institution.

In what follows, the objective will be to suggest certain points of intersection between institutional research and academic policy formulation, and to explore some of the ways in which institutional research can be of use in the policy formulation process.

AN OVERVIEW

Institutional research can play a significant role in academic policy formulation because (a) it is assigned a support role to facilitate the process of decision-making within the institutional planning-management framework, and (b) within that framework, academic planning and management is a continuum. In its least complicated formulation, policy planning and management involves (a) identifying policy issues and (b) making decisions with respect to action. This direct channel may be deflected to incorporate the support that can be provided via institutional research in (a) delineating the operative experience factors, (b) undertaking necessary analytical studies, and (c) reporting on probable impacts of alternative courses of action.

In speaking of academic planning and management as a continuum, there are several corollary concepts and phenomena to be noted. First, higher educational institutions function in a rapidly changing, dynamic world. A static posture is inappropriate; rather, institutional policy and behavior must be flexible, responsive to change, easily adjusted. Second, the stimulus to change comes from both external and internal sources. Environmental circumstances surrounding the educational enterprise's activities change at least annually and sometimes more frequently generating parallel changes internally. With both the internal and external environments associated with the educational enterprise subject to continuing change, it is necessary for supporting research and planning functions to be correspondingly continuous in nature. Third, some recognition of these conditions already exists. The budget cycle requires an annual review of commitments and resource requirements and allocations to various manifestations of academic programs. Fourth, the annual budgeting cycle provides an opportunity for longer range review of commitments; i.e., a four-year or five-year academic plan. Fifth, this implies that institutional research be structured as a point of departure for developing a comprehensive management and planning systems orientation.

Sensitivity to these concepts will lead the institutional researcher along a path involving the following gradations: (a) the shaping of the framework in which issues are explored in a manner consistent with the possibilities for providing useful support to decision-making, (b) the structuring of analytical frameworks that incorporate the imperatives of scale, breadth of coverage, and decision-making focus inherent in large scale enterprise that education constitutes, and (c) the design of techniques for exploratory analytical activity before a situation is confronted so that the decision-maker can exercise discretion in opting for any of the range of possibilities the IR analyst has explored. Depending on the scale of the institution, the mechanism for examining the issues must be (a) subject to a periodic reiteration, (b) reliable, (c) easily and rapidly manipulated.

A CONCEPTUAL FRAMEWORK

The institutional research assignment and attendant functions suggest considerable breadth and scope for organizing an institutional researcher's operations. Taken together with the range of demands that might be generated by way of supporting the academic planning and policy formulation function, there is clearly the need for a conceptual schema in which to identify activities, assign priorities, and perceive the range of requests and possibilities for their implementation.

In the conceptual framework proposed here, a three-set structuring of relevant experience variables would be identified for organizing information and conducting various analyses. One set would consist of all external variables impinging upon an enterprise. Another set of variables would encompass those internal, policy-oriented type factors that imply the adoption of a particular policy stance for testing or application. The third group would consist of those internal factors that respond passively to the quantitative manifestations and links that are established between various external and internal policy type factors operative within the particular situation.

The implementation cycle associated with a particular institutional research assignment would start with information collection and storage, proceed with manipulation and reorganization, and conclude with information retrieval and presentation.

OPERATIONAL GUIDELINES

In this observer's view, there are four main areas via which the institutional researcher can influence academic

policy formulation: (a) data support; (b) the formulation of relevant analytical structures; (c) reinforcing quantitative information collection and support processes with qualitative evaluations; and (d) the design of evaluation system logic that links internal and external forces to academic policy formulation.

1. Data Support

Obviously, the institutional researcher can be charged with responsibility for providing quantitative data that is relevant, reliable and usable in the context of academic policy consideration. This aspect of institutional research activity is pure data gathering. Sometimes the researcher may undertake special primary data collection activities; e.g., special studies of faculty activity patterns designed to yield a better basis for distributing cost information among various functional categories of program support, such as instruction, research, community service and administration.

2. Formulating Analytical Structures Relevant to the Policy Formulation Process

Clear thinking can only be accomplished within the context of well conceived analytical frameworks. Call it research design, model building, simulation. Whatever the term, in contributing to academic policy making it involves the formulation of analytical structures in which external forces and internal activity, resource commitment and resource availability experience categories are related more directly to program categories. Thus, if academic policy formulation requires reliable information with respect to program costs, it is likely to be the institutional researcher who has to conceive of the way in which programs can be defined, their costs identified, and the contributions or benefits flow from the programs evaluated.

Consider an illustration drawn from the perspective of the system-wide level of operations. In state-wide, publicly supported systems, public benefits and costs are directly dependent on student origins and institutional service point locations. Decisions with respect to the timely location of new campuses require an identification of such geographical concepts in terms of student origin and point of considerations. Policy formulation with respect to the level and type of campus and academic program development at new institutions will be similarly affected by such considerations. Research in this area should take into account total costs including amortization of capital outlays, student and staff commutation costs, and indirect other community costs. The optimal location with respect to costs is one which minimizes total costs regardless of the mix among the constituent elements.

3. Collection and Use of Supporting Information

It is generally accepted that data collection for the purpose of numbers alone is not a very useful concept for organizing activity. But of paramount importance for the formulation of academic policy is the qualitative reliability and relevance of assembled quantitative data.

Too often institutional administrators discover that the quantitative data describing the experience factors chosen for exploration in a particular problem are unreliable, that they do not reflect what they purport to represent, that they are sometimes specious and misleading. The institutional researcher in such a situation must assume the responsibility for defining and reinforcing the meaningfulness of quantitative data that may be reported by assessing and insuring the qualitative acceptability of such information.

Interinstitutional comparison is a technique frequently used in academic administration for surveying available experience in dealing with particular academic problems. One need only examine the American Council of Education periodic listings of institutional questionnaires to confirm this predisposition. The IR analyst may play a valuable role in this situation: first, to take responsibility for assembling the interinstitutional comparative data that reflects upon the particular issue at hand; second, and more important, to assess the qualitative significance of the quantitative data thus assembled; third, to adjust the approaches suggested in the comparative experience to terms of reference meaningful in his institution's unique circumstances.

4. Designing Analytical System Logic

In order for the institutional researcher to contribute to the shaping of academic policy, he should avail himself of evaluation system structures that are logical and reliable and that encompass the appropriate sets of variables to deal with the particular issue at hand. The institutional researcher can develop analytical models that depict his institution or system in a dynamic environmental context, giving full recognition to external forces, policy factors and passive experience factors.

For example, enrollment flows in such a system would be made a function of population change, public policy adjustments (such as open enrollments or changes in draft policy), social trends in rates of participation of students in higher education enterprise, the character of student choices being made with respect to vocational and non-vocational programs, and so on.

Similarly, academic programs are fueled by money, and academic policy formulation requires knowledge of how much money is going to be available. In this connection, projections of income flows from gifts and grants need not be mere extrapolations of past experience. Instead, they may take account of specific external forces that are known to be relevant, such as the general state of the economy, the state of the security markets, the numbers and profile of alumni with respect to length of time since departing the institution, etc. By way of illustration, at Beliot College a model focusing upon the financial development of the College was established.

In one version of the model, the flow of funds from gifts and grants was made directly a function of past experience, the number and age profile of alumni, the state of the economy generally, and the status of the equity securities markets. The result was a projection that produced an interesting and useful barometer on what might be expected with respect to income flows of this type. As a corollary, the broader financial model, together with the particular contribution made by the gifts and grants

component of the model, permitted the adoption of academic policies that were based on reasonable assessments of what might be expected in the way of financial changes throughout the College's operating accounts.

In another recent application of modeling techniques to academic policy issues, Richard Stockton State College, a new college in New Jersey, used interinstitutional comparisons to assist in formulating a variety of organizational parameters. A simulation model was developed which permitted the delineation of a profile of institutional academic organization expressed quantitatively almost a year before students were due to appear on campus and several months before the first groups of candidates for entry into the inaugural class received application forms. Starting operations with a thousand students entering at the first and third year levels, approximately on a 60-40 basis, the model yielded information regarding the mix of FTE student numbers between lower level and upper level courses, the fact that 70 percent of the 63 faculty permitted under the staffing formula would be required to handle lower division courses, and an improved basis for recruiting and scheduling faculty assignments. By way of supporting the effort, this involved, among other avenues of research activity, a series of interinstitutional studies of student course registration patterns. Since students within an institution can be described in terms of majors and in terms of various levels of progress through the degree program offerings, it was possible to distill the experience of other institutions and postulate a population structure associated with individual courses and levels of discipline offerings. Models should be capable of handling internal as well as external changes. For example, academic policy with respect to faculty load can be delineated in several ways. Faculty load may be expressed in terms of number of hours of teaching per week in formal classes, regardless of class size. Or it may be expressed in terms of number of student contact hours per week, regardless of number of courses. Or, in turn, there may be parameters with respect to the number of different courses that a faculty member may be expected to offer. In any case, the institutional researcher should be able to point out the significance and some possible consequences of the particular policy that is being considered. With few exceptions, these links cannot be forged at a department or discipline level of administration. Not infrequently, the talents of the institutional researcher are required to overcome deficiencies in being able to perceive the issue, inadequacies of scope with respect to required input resources, or lack of adequate staff interest or resources to implement a study of this type.

The relevance of this approach may be underscored by reference to a variety of other illustrations, covering such phenomena as the decline in government funding of scientific research and the support of graduate study, changes in military draft policy (both rates of conscription and regulations affecting student exemptions), the rise of student campus unrest and activism, and changes in student and faculty housing styles.

In all of these instances, forces external to the higher education enterprise per se—federal government policy, urban decay, a revolution in social values—come into play. In other cases, severe pressures generated internally might trigger change. All are of sufficient magnitude to impinge noticeably upon institutional operations, whether by affecting financial or student flows. Internal policy adjustments, such as adjustments in faculty or student recruitment programs, are stimulated, and certainly a review of policy in these areas becomes warranted. The working through of the combination of external pressures and internal policy adjustments are traceable in a variety of more passively responsive experience indicators; e.g., space accommodation, capital outlay, class size, faculty load, etc. The mechanics of policy formulation require the support of adequate data, incisive analytical models, and effective reporting.

EPILOGUE

This paper has focused on institutional research as it relates to academic policy formulation in the individual institution. But the observations apply also to the multi-institution, system-wide context. The role relationships in broad outline are the same; only the size of the arena differs.

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[1] J.L. Saupe and J.R. Montgomery, *The Nature and Role of Institutional Research . . . Memo to a College or University*, (Association for Institutional Research, 1970), p. 3.

INSTITUTIONAL RESEARCH AND POLICY FORMULATION: A CONTINGENCY MODEL

Marvin W. Peterson
The University of Michigan

In reading the literature about the office of director of institutional research, much of which is a product of this annual meeting, one is struck by the perpetual identity crisis of the office—What is it? What should it be? What should it not be? This phenomenon, I would suggest, is a product of the organizational equivalent of the Peter Principle; i.e., "every office (any player) tends to rise to its level of dysfunctionality (incompetence)."[1] While many IR directors may have reached their own level of incompetence, the role or office probably has not yet reached its level of dysfunctionality. The continuing identity crisis is more realistically an example of the Peterson Corollary: "Identity crises in organizational offices are a product of the creative conflict of the incumbents who have reached their level of incompetence and want to maintain the office as it then functions with those who see for it a new or different role."

The analysis which follows will only partly support the somewhat facetiously stated principle, but does seriously attempt to develop a contingency model for institutional research—a model in which the function and content of IR is contingent upon changing conditions in the higher educational institution and its environment.

The model does not deal with the practical but important questions regarding to whom the director of IR reports, the competency of the individual involved, or the role of the IR director in decision-making and information utilization, although insights into these issues might be garnered. Rather it assumes only that institutional research is a process which utilizes information from the university's data base (or management information system), which provides data based research for its decision making process (formal or informal) and contributes primarily to the institution's "adaptive" capacity. By adaptive capacity I am referring to those organizational processes which make it possible for the college or university to cope with pressures for change whether those are internal changes to improve performance or changes which represent a sensing of, and response to, external conditions or changes.[2] While an institution's adaptive capacity may be enhanced by many factors such as the willingness of its members to change, the availability of slack resources with which to make or reward change efforts, creative leadership and the like, my concern is with the interrelationship of those institutionalized or regularly established processes which contribute directly to the institution's adaptive function. For instance, how is institutional research related to those other adaptive sub-processes such as innovation, experimentation, and planning which are all heralded as ways of changing higher educational institutions?[3] How are these sub-processes related to the decision making process and to the management information systems which are so widely touted? In general, colleges and universities have not developed or institutionalized any extensive notion of their adaptive function which encompasses institutional research, MIS, decision-making processes and the adaptive sub-processes. Indeed, one of the reasons higher educational institutions may have been so inept at adjusting to new realities, in adapting, is the limited focus which is usually taken on these various sub-processes rather than on their interaction which contributes to the larger adaptive capacity or function. The role of IR within this larger adaptive function is the focus of this paper and the model which follows.

THE MODEL

Figure 1 and 2 attempt to depict the varied forms of research which can contribute to decision-making, the information sources utilized in each and their interrelationship. In Figure 1 a management information system is referred to in its broadest sense; i.e., all operating data collected in data files whether manual or automated which is either analyzed and reported or potentially available for analysis and research. A typology of decisions devised by Robert Anthony[4] which categorizes them in relation to institutional needs is helpful in identifying forms of research which have or might be the focus of institutional research and in discussing the contribution of decision-making (and research) to an institution's adaptive sub-processes.

Policy decisions, the broadest and most encompassing decisions, are those concerned with a college's or university's long-term objective, its program goals and strategies for achieving them, and its strategies for obtaining the necessary resources. The focus is on an optimal overall design for the institution to assure its long-term success. "Policy related research," of which universities do little, is concerned with making and assessing policy decisions. In making such decisions research which forecasts and identifies the impact of changing conditions external to the university which affect its administrative (i.e., finance and government), academic, enrollment, or other areas is extremely useful. In assessing such decisions, long-range studies of achievement of general objectives, of resource utilization, and of the effectiveness of the institution's structural and functional patterns as well as comparative studies of other similar institutions is potentially valuable. "Operations research" which focuses on the development of forecasting and simulation models is a useful approach to devising the models or techniques with which to do policy research; i.e., to provide mechanisms to evaluate alternative program and resource strategies.

A more limited set of decisions are *managerial* in nature. They focus on issues related to the selection of specific programs and the allocation of resources among

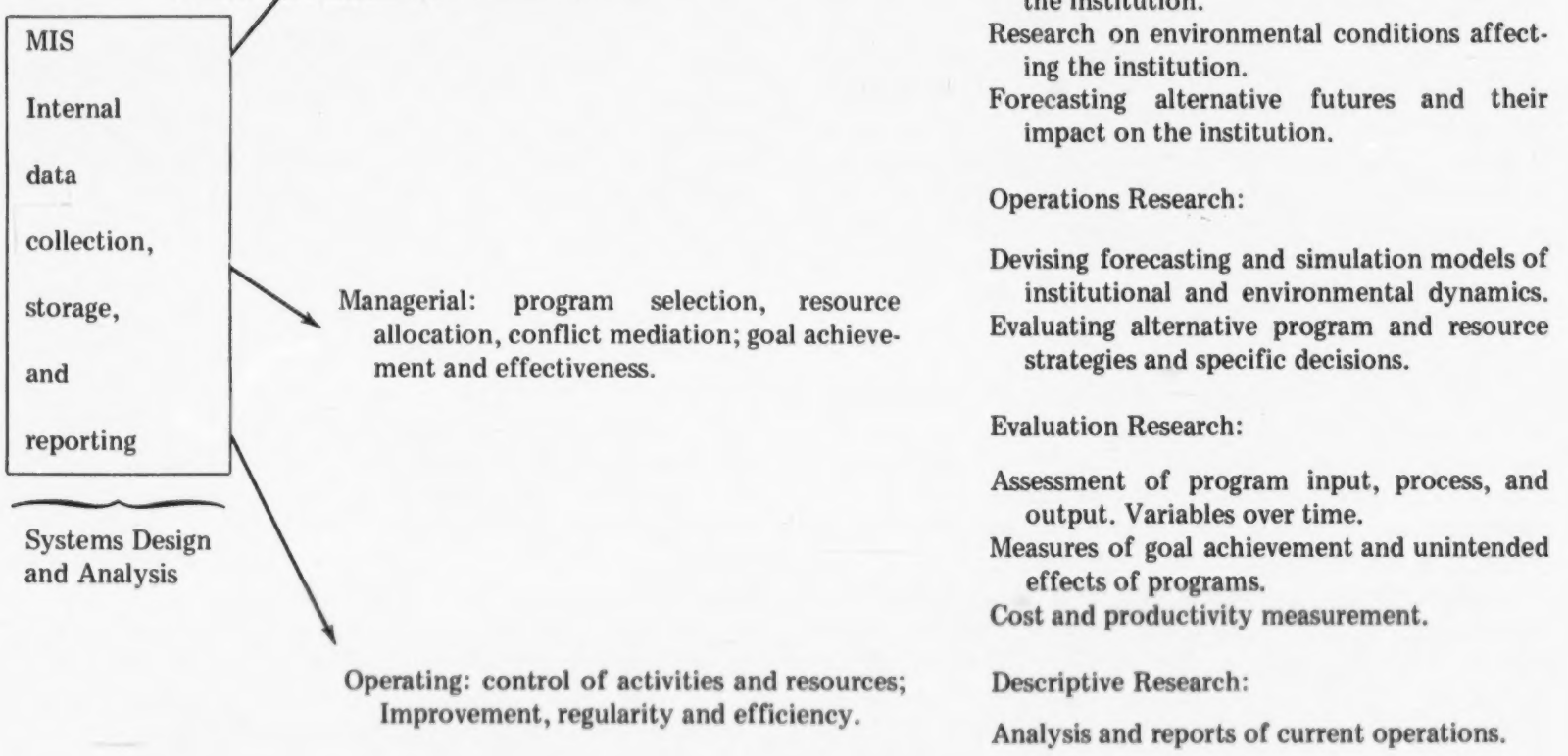
Type of Decision and Organizational Need
Type and Content of Research
Policy: reordering of goals and objectives; program and resource strategies, and overall structural patterns; concern for long term success and optimal design of the college or university.
MIS
Internal
data
collection,
storage,
and
reporting
Systems Design
and Analysis
Managerial: program selection, resource allocation, conflict mediation; goal achievement and effectiveness.
Operating: control of activities and resources; Improvement, regularity and efficiency.
Policy Research:
Long range studies of organizational goal achievement and resource utilization.
Comparative research of other higher education institutions.
Studies of overall structure and functioning of the institution.
Research on environmental conditions affecting the institution.
Forecasting alternative futures and their impact on the institution.
Operations Research:
Devising forecasting and simulation models of institutional and environmental dynamics.
Evaluating alternative program and resource strategies and specific decisions.
Evaluation Research:
Assessment of program input, process, and output. Variables over time.
Measures of goal achievement and unintended effects of programs.
Cost and productivity measurement.
Descriptive Research:
Analysis and reports of current operations.

Figure 1: Relationship of MIS, Decision Making and Research

them, the coordination of various programs and resolution of conflicts among and between them. Within the broad statement of objectives and strategies, these program decisions are focused on more specific goals which assure that the objectives are accomplished. In making the initial decisions, the models designed by "operations researchers" again can be useful in assessing the resource requirements of various program alternatives and their impact on other existing patterns or programs. "Evaluation research," which assesses the extent of goal achievement of program and allocation decisions and the change in important program input, process, and output variables over time to ascertain the program's intended and unintended effects, is the more commonly used form of research for such decisions.

Finally, *operating decisions* relate to the way in which program activities are carried out. The concern is to control the activities of the program and assure efficient use of resources allocated. The response is to an organizational need for regularity and efficiency. Research which contributes to these decisions consists primarily of "analytic or descriptive" reports of the state of a program's operation or activities.

Figure 2, which highlights a decision path and information flow analysis, suggests how these decision categories and types of research are interrelated with innovation, experimentation, and planning to constitute an institutional adaptive capacity or function. *Planning* in this model is analogous to the initial portion of Peter Drucker's definition of it as "a continuous process of making present entrepreneurial decisions systematically and with the best possible knowledge of their futurity."[5] It essentially encompasses policy decisions and the program selection portion of managerial decisions and the related use of policy and operations research to make decisions systematically with a knowledge of their futurity. *Experimentation* which is essentially the commitment to a process of attempting to measure and evaluate new program and resource allocation decisions is seen to be the systematic relationship of evaluation research to managerial decisions. To a lesser degree the use of policy research to assess policy decisions and of operating data or descriptive research to improve program operating decisions reflects an experimental approach to these decision commitments. Finally, *innovation*

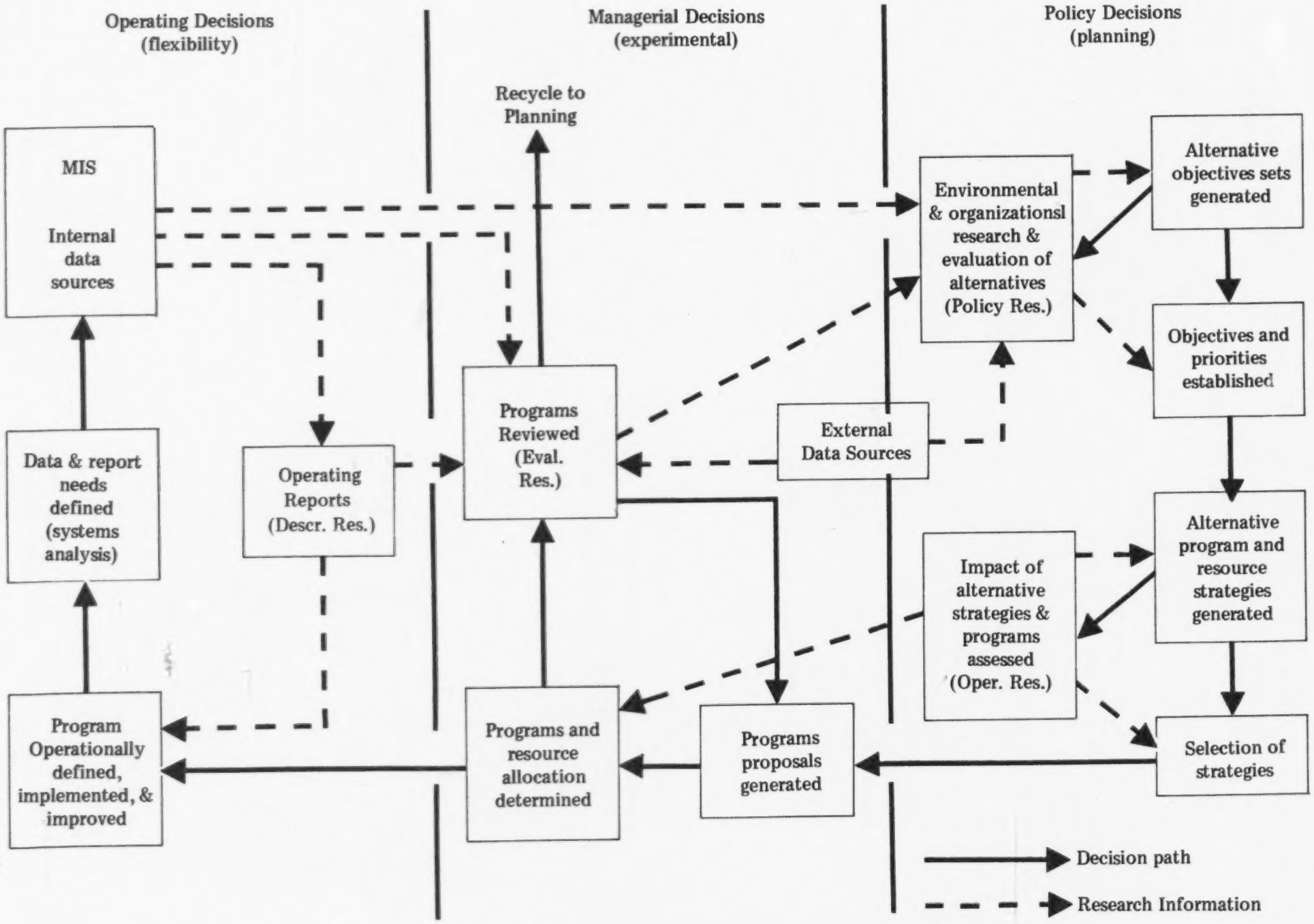

Figure 2: The Relationship of MIS, Decision Making, and Research As The Institution's Adaptive Function*

is a capacity to identify and a willingness to consider new alternatives at the policy, managerial, and operating decision level and is facilitated by research efforts that uncover new alternatives and by decision structures which are readily accessible to students, faculty, and administration with new ideas. At the operating level the commitment to *flexibility* is necessary to prevent ossification of programs and management information systems and their respective structures which impede innovation, experimentation, and planning.

This view of the types of research which are dependent on a management information system for basic data and reports and is related to categories of decision-making in a manner which facilitates the adaptive processes of innovation, experimentation, and planning is useful in three ways. First, the model provides a basis for identifying some requisite condition for IR to operate effectively as a "policy research" unit. (It should be noted at this point that this model applies to the academic, administrative, and enrollment issues highlighted at this conference and nothing in the model precludes the IR office from performing several of the research roles simultaneously.) Second, it provides an evolutionary model for explaining the changes in the focus of institutional research. By definition, if IR is a successful contributor to institutional adaptation, it will itself change. Third, it suggests some changes for the IR office which attempts to function at the policy level. The remainder of the paper highlights these points.

THE CONTINGENCY FACTORS

It goes without saying that effective policy research presupposes the existence of some descriptive, evaluation, and operations research as inputs to policy research. However, three conditions in other areas also affect the potential for doing policy research.

1. MIS Sophistication: The development of a sophisticated management information system to provide easily accessible data on internal operations for policy research as well as the other forms of research is obvious. Dimensions of MIS development/sophistication include (a) the degree of compatibility and uniformity of data elements and their definitions in different data files, (b) the extent to which different data files are integrated, i.e., readily accessible from one retrieval point without having to search different files for different data elements needed to prepare a report or piece of research, (c) the degree to which the data system is automated both for storage and retrieval and for performing research manipulations, and (d) the flexibility of the information system (or data processing staff) to change and modify the system. The reason for so many IR offices' involvement in systems design and analysis at this time, I would suggest, is not an indication of IR office interest in this activity. Rather it is a barometer of the extent to which there is a lack of sophistication in most university MIS systems which impedes research and reporting efforts by IR officers.
2. Organizational Factors: Several organizational factors in the particular college or university setting are required to support effective "policy research." First, policy level decision-making, and planning requires an administrative style and predisposition on the part of all key participants in decision-making which takes a long-range perspective on major decision issues. This is not easy to find among administrators who have succeeded in the past on day-to-day decision-making, have been pressured by continued disruptive crises, and have received fulfillment from dealing with daily personnel problems. Neither is it a state of mind engendered by students who want action now and by faculty who like the way things are or were. (Some would argue that the failure to take a long-range perspective earlier caused some of our current problems.) Second, if policy research is to be utilized, a decision-making structure which concerns itself with policy matters is needed. While membership may vary, it seems appropriate to have wide representation to insure legitimacy of such a decision.[6] It should also be apparent that at the policy level, academic, enrollment and administrative issues cannot be separated. Representatives of all these areas need to be involved. Further, any policy structure needs to be coordinated with those groups or individuals dealing with managerial and operating decisions. Third, there is a need, as the model suggests, to coordinate the decision-making effort, the MIS, and the decision-making structures especially at the policy level. Whether this is done under a senior planning officer or the chief academic officer is probably less important than the need for high level coordination. A fourth and related contingency factor is the degree to which planning decisions and the related policy research functions are carried out by a state coordinating agency. To the extent that such agencies are staffed to do state wide policy research for higher education and control extensive policy and new program decisions, there will be less need for such research at the institutional level except as a protective reaction. Finally, if institutional research is to have an extensive policy research role, the office will need extensive support to insure that the other forms of research are carried on or, to the extent possible, they may be decentralized to operating units in the academic, financial, and student affairs areas.
3. Environmental Concerns: Any college or university exists within some larger setting which in part affects its operation. In order to utilize policy research to understand this larger setting or environment, it is first helpful to identify the segments of the university environment which affect the university most as a focus for research. Some examples might include existing and potential sources of financial support, supply and demand for various types of trained personnel within the institution's

region, potential student enrollment numbers and characteristics, important external groups and similar institutions with which comparisons might be made. These segments can be characterized in terms of their rate of change, their predictive certainty, their degree of interdependence, and possibly other dimensions. To the extent that an environmental segment has a high rate of change or predictive uncertainty, policy research focused on the environment can probably not assist planning per se; rather it should focus on organizational studies of the institution's capacity to respond (or identify impediments). On the other hand, to the extent an environmental segment is unchanging and highly predictable, there is little need for extensive environment—focused policy research. Extreme examples might be a community college's concern for the demand for trained manpower in a rapidly growing, culturally shifting, urban area versus one in a rural stable population area. If the segments are highly interdependent, environmental research is much more complex; e.g., economic and industrial activity levels may affect both program demands and enrollment trends. Thus, it is clear that the extent and desirability of policy research is contingent upon the MIS system, other organizational characteristics of the institution, and the nature of its environment.

INSTITUTIONAL RESEARCH AS POLICY RESEARCH

The validity of the model of research in the adaptive process is in part supported by the evolutionary pattern of institutional research the past two decades. In the early and mid 1950's, the emphasis was clearly on collecting data and preparing reports on current operating levels, especially the growing enrollments and growing budgetary commitments. Indeed one of the most pressing early functions of IR directors was the identification and collection of existing data on operating characteristics and coordination of it in one place. The Doi-Russell articles of the mid 1950's[7] mark the entry into an era of evaluation research in which financial studies stressed productivity, cost ratios and comparisons of revenues and expenditures among institutions. This was followed by IR offices which focused on studies of student development and on curriculum evaluation. Indeed, as late as 1965 Rourke and Brooks found that 80% of all IR offices reported their primary focus in one of the three areas of financial, student or academic studies.[8] The past five years have seen more and more IR offices concerned with systems design and analysis and operations research. The need for this MIS development to facilitate other research was mentioned earlier. It is also, in part, a prelude to a concern for policy research which can improve planning; indeed, the emergence of planning offices at the vice presidential level and offices of IR and Planning are growing more common. The connection of these developments with increased state government concerns for program budgeting and financial accountability and internal cost pressures is indicative of this as an institutional attempt to adapt itself to new realities.

In addition to the evolutionary pattern, the model and the contingency factors suggests certain changes in the IR office which attempts to function at this level. First, even though improved MIS may facilitate internal data gathering, the data collection role of IR will expand outside the university due to the extensive emphasis on environmental and comparative research efforts and internally due to the ad hoc nature of much policy research which precludes regularizing it. Second, while it may be possible to segregate, routinize, and decentralize some evaluative and descriptive research on students, academic programs, and administrative matters, this is impossible at the level of operations research and policy research. Expertise required to deal with all three issue areas, with organization theory and with the technical competencies in operatings research and policy research will significantly expand the skills required by the staff of most IR offices. Finally, the more central role of IR in overall policy decisions of institutional planning suggests a far greater concern on the part of the office for improving utilization of information and explication of research efforts and approaches among persons on policy groups (students, faculty, some administrators) who are not accustomed to the complexity of simulation models, policy research and the like. Related to this, of course, is the increased sensitivity required of the office and its staff as it plays an increasingly major role in institution—wide decisions in a period of tight financial resources.

Thus, the evolution of IR does support the model of an office whose shifting research is constantly tending to rise to its level of functional incompetence—trying in this case to enhance the institution's adaptive capacity. Whether or not policy research marks the apex of IR is, of course, open to speculation. Its future identity crises should provide some indication of that.

[1] L.J. Peter, and R. Hull, *The Peter Principle* (New York: William Morrow and Co., 1969), p. 25.

[2] For a discussion of the concept of and forms of organizational adaptation to environmental changes see W. Scott., "Flexibility, Rigidity and Adaptation," in *Experiences, Structure and Adaptability*, ed. by O. Harvey (New York: Springer Pub. Co., 1966), and D. Katz and R. Kahn, *The Social Psychology of Organizations* (New York: John Wiley & Sons, 1966).

[3] For this idea I am indebted to a talk by James I. Doi, "Some New Developments in Institutional Research," Paper delivered at the Workshop for Community Colleges, University of Washington, Seattle, September, 1968.

[4] R. Anthony, *Planning and Management Systems* (Cambridge: Harvard Graduate School of Business, 1965).

[5] P. Drucker, "Long Range Planning Means Risk-Taking," in *Long Range Planning For Management*, ed. by D. Ewing (New York: Harper & Row, 1964).

[6] For discussion of decision structures which may be appropriate to policy decisions see M.W. Peterson, "Decision Type, Structure, and Process Evaluation," Paper presented at American Association for Higher Education National Conference, Chicago, March, 1971.

[7] James I. Doi and John Dale Russell. (Five Part) "Series on Expenditure Analysis," *College and University Business*, September, 1955—August, 1956.

[8] F. Rourke and G. Brooks, *The Managerial Revolution in Higher Education* (Baltimore: Johns Hopkins Press, 1967), p.48.

THE SOFT DATA COMPONENT OF INSTITUTIONAL RESEARCH

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In a recent issue of The Wall Street Journal, a story appears concerning the life of a professional bridge player. Among the other interesting aspects of the story, the bridge professional disclosed that one of the highly significant facets of his skill at bridge was his ability to read his opponent—that is, his ability to perceive, understand, and make use of the human element in the game of bridge. Likewise, in the games of golf, tennis, football, or for that matter any sport where people are involved, a participant increases his chances of winning if he knows something about his opponent in terms of his mental makeup which dictates how he will play the game. For example, as a mediocre but dedicated tennis player, it is extremely important for me to know whether my opponent is likely to take the risk of slamming in a hard second serve or whether he will hit an easy second serve to insure that it will stay in bounds. Beyond the ability of the opponent, there are these human attributes which directly influence the flavor of the competition.

Now I am not going to suggest that college administration is an analog to sports in the sense that it is a competition with an opponent, resulting in a winner and a loser. However, we have all heard numerous times and in numerous ways of that *sound management principle* which speaks to the necessity of making decisions with as much information and before-the-act knowledge as possible. Indeed, any manager, including a university administrator, would like to be at least one step ahead of any decision point, especially if that decision might be framed in a crisis situation. The goal then of a good manager/administrator is to strive to be as well prepared as possible with as much information as possible, whatever the nature of that information.

INSTITUTIONAL RESEARCH

With the foregoing in mind, we need to ask about institutional research, however you may define it, and how it fits into the scheme of university management. Without getting into a detailed discussion of what specific role institutional research should pay in an institution, we could probably all agree that, generally, institutional research makes its living by supplying data about the institution and things related to it. In addition, the data at least implicitly are focused on enabling university managers to make better decisions. Therefore, based on the *sound management principle* of the need for as much pertinent information as possible for decision making, institutional research has an obligation to provide as much data of every kind as possible.

Historically, IR has been of two kinds. On the one hand, institutional research offices have been effective and prolific in supplying student credit hour figures, FTE figures, average load figures, average class size figures, utilization figures, cost figures, etc.—essentially the hard data (in relative terms) that describe the institution. On the other hand some institutional research offices have been measuring attitudes and achievements of students and faculty and have produced the scholarly reports giving results of freshmen taking the Bernreuter Personality Inventory, the students' attitudes toward achievement and campus unrest, the results of a faculty sample on the Omnibus Personality Instrument—essentially the soft data (in relative terms) that describe attitudes and characteristics of populations in the institution.

Generally, these two classes of institutional research output (hard and soft data) do not reside in the same organizational unit in an institution. For example, at one institution I know, the soft data office, called Student Affairs Research, reports to the Vice President for Student Affairs; and the office dealing with hard data, called Planning Studies, reports to the Vice President for Planning. The two units are not aware of what the other is doing, and it is altogether possible that neither is aware of the comprehensive need for data for decision-making by the institution's managers. In other institutions with which I am familiar, institutional research as the formal name for the unit, represents either the soft data component or the hard data component, but not both in any one institution.

But the issue is not whether in fact the two classes of institutional research output (hard and soft) exist together in one organizational unit in any institution, but that they *should in all*. The reasons for this necessity revolve around the full reconciliation of the *sound management principle*. The obligation of and justification for institutional research, as I see it, is to fulfill that principle by providing the fullest possible set of data for use by managers in decision-making. An institutional research office cannot fulfill that obligation by providing only the hard data or providing only the soft data. It must provide both by first assessing the decision needs of the management structure and then providing whatever data are necessary to meet the needs.

It appears, to me, that 1) most institutional research offices are of the hard data variety, and 2) most importantly, that the soft data outputs, no matter what the structure of the institution or from which organization unit they come, are seldom conceived or used for significant decision-making by managers. Therefore, I would like to provide the rationale for softer data uses and outline some potential soft data approaches which highlight the way in which soft data can provide the fulfillment of the *sound management principle*.

THE SOFT DATA COMPONENT

In the final analysis, all decisions are made by humans and ultimately and directly affect the decision makers as well as significant numbers of other humans. This is true in university management as well. In addition, because of the intellectual freedom and lack of managerial hierarchy in institutions of higher education, the constituents of university management—faculty, students, and other staff—reasonably expect to have significant input to important

decisions. They also have the potential to reject decisions and more actively and effectively demonstrate dissatisfaction than do members of other types of organizations. For these reasons, university managers must be aware of the attitudes and perceptions of their internal constituents if they are going to operate effectively and responsively. Further, because institutions of higher education are in existence to serve the society of which they are a part, it behooves the managers of any institution to be aware to some degree of the attitudes and perceptions of the population external to the institution. It is through such knowledge, both internal and external, that effective realization of institutional objectives can be achieved. These attitudes and perceptions can be measured only by soft data approaches. Now we have our rationale.

Let me say before citing examples of such soft data methods, that I am quite aware of the shortcomings of present methodologies in soft data areas. Although we recognize shortcomings in our class size statistics and cost ratios, we still use them (while always seeking improvements) since they give us a partial picture rather than the alternative of no picture at all.

The Campus Environment.

The area of perceptions of the campus environment, popularized by Pace, Stern, Marks and others, while somewhat passe in psychological measurement circles these days, offers an excellent example of possible uses of soft data.

Either by focusing on the entire institutional environment or a specific sector of interest, the perceptions of such environments could be measured using a variety of subject populations. The most obvious certainly are students, faculty and staff. In addition, there are sub-populations of interest within these groups, as well as others outside the institution such as the community or the institution's board of control.

In a study conducted at The Pennsylvania State University,[1] using a freshman sample, the perceived differences between what the subjects saw as the ideal environment versus the real environment were measured. Aggregated statistics showed in what areas of the Penn State environment there were similarities or differences between what the freshmen saw as ideal and what they perceived as the actual state of affairs. Looking at it positively, the results indicated the degree of "fit" between what the student expected and found was quite high. The freshman sample in this study typically viewed characteristics which they felt were not ideal as uncharacteristic of Penn State. It seemed, therefore, that they saw their impending college experience as a good experience and viewed the university in the best possible light. In other words, an incoming freshman without any college experience perceived the environment of his college as representing a good "fit" with his expectations and personality. This suggests the desirability of subsequent measures which would highlight any change or movement of the real away from the ideal and pinpoint the areas of the campus environment in which such change occurred. Significantly, with this sample of essentially satisfied freshmen there were areas in which there was dissonance between the perceived and the ideal. These areas thsu represented salient unsatisfactory areas in the institution which could indicate the need for att ntion by a concerned administration. While it is true that .he dissatisfaction is imputed to the subject population, such a finding does represent a potential trouble area which could be valuable warning to an administrator.

Additional information from this environment perception method can be gotten when various populations or sub-populations are compared. For example, if significant differences are found between the perceptions of the student population on any segment of the campus environment, valuable information for decision-making has been learned concerning potential difficulty, need for change, or obvious misperceptions.

As another example, if perceptions of students could be measured longitudinally, the differences could be significant in terms of how their perceptions have changed. Think of what might be learned about student unrest and the potential for violence, if perceptions of the student population could be compared befc:e and after a campus crisis such as a sit-in arrest situation.

Institutional Goals.

In a study using similar measures, Gross and Grambsch[2] measured by a national sample the perceptions of administrators and the perceptions of faculty concerning the goals of the university. Among other issues, they looked at the priority ranking of university goals and delved into the perceived goals question and compared faculty responses with those of administrators. They found that faculty and administrators were not far apart in their perceptions and that the perceived and preferred goals were in close congruence in each group.

While the methodology of the Gross and Grambsch analysis has been attacked, the potential for using the kind of information they collected is great if it is available from your own institution. Even if the discrepancies between faculty and administrators and between perceived and preferred goals were few, a vice president for academic affairs might be quite interested in what the nature of the differences were. In addition, these days when the use of planning programming budgeting systems (PPBS) requires that we clearly set forth our goals and objectives in an institution, a study of this type could be an excellent starting point for a dialogue with faculty concerning such things.

Innovation Introduction.

Another relevant example would be the use of perceptual measures to evaluate the impact of changes on campus—especially new innovations such as management information systems, program budgeting, or a new form of governance. It would be quite interesting to know the level of understanding and the perceptions of those affected during the implementation of an information tool such as a simulation model. Their perceptions could be assessed 1) on the source of the innovation in the institution, (pushed by the executive officers, the computer people, IR, etc.) and 2) on the reasons for and effect of the innovation, (seen as a threat, as positive, as negative, as political, or as beneficial).

By identifying those people with positive perceptions and those with negative perceptions and examining relevant variables, one might discover those factors related to success or failure in the implementation of such innovations. At the very least, the institution would have a better understanding of the institutional climate during the implementation and could make more knowledgeable decisions in their current implementation policy and tactics.

Faculty Activity Analysis

Another area where perceptual measures could be used would be the troublesome area of faculty activity analysis. To use an example which hits home with all of us, let us suppose that one's legislature or funders were uptight about the amount of time faculty were working and spending in the classroom. While soft data approaches would not in any way replace the report of class contact hours for faculty, a carefully prepared analysis of the perception of students of how much time faculty spend directly furthering the instructional process might go far in making a nine-contact-hour per week load look reasonable to a legislature. If in fact, students in a department perceived their faculty as hard working and as spending, or willing to spend, significant out-of-class hours working with individuals or groups of students, the case for showing that faculty do more than meet classes as part of their job would be stronger. Within the institution, this kind of measure could be helpful to an administrator in discovering strong or weak departments and individuals in their contribution to the instructional program.

PPBS

Finally, Rensis Likert, in a recent journal article,[3] offers an example of a way that soft data can be used in conjunction with the current push in higher education for planning programming budgeting systems (PPBS.) Likert warns that "it is very difficult, if not impossible, to state organizational objectives so that the extent to which they are being achieved can be measured quantitatively and at a reasonable cost."[4] He suggests that the PPBS focus be shifted from end result variables to human organizational variables. This would involve all the major human organizational variables about which Likert has written so well "... including both *causal*—such as managerial behavior—and *intervening*—such as communication, motivation, and control."[5] The overall picture thus points to PPBS evaluating objectives which are stated in terms of human organizational variables. The rationale is based on evidence which shows that organizations functioning well according to human organizational variables, are, or soon will be, achieving their end result variables (which in higher education are difficult to state and measure). The use of such human organizational measures for PPBS evaluation prevents a kind of sub-optimization from occurring. In general this sub-optimization occurs when the stated objectives of an organization cannot be dealt with quantitatively (which we find to be the case with higher education). In an attempt to quantify, lesser objectives or sub-objectives take on the guise of major objectives simply because they are quantifiable. But these sub-objectives if maximized, may not contribute positively to the real objectives, and in fact may detract from them. Thus, we have sub-optimized. If using soft data objectives (human organizational variables) can prevent this and make PPBS more workable for higher education, at least one sufficient justification for soft data has been found.

THE SOUND MANAGEMENT PRINCIPLE REVISITED

While the above examples may have been interesting or enlightening, many will respond that all of the examples are not necessarily new and revolutionary. To that I would agree and then point out that *the significant point is not the application of soft data per se, but the provision of all relevant data, including soft data, by the IR office for institutional decision makers.* This means institutional research has the obligation to scan the institutional environment and develop appropriate data using *all* methods available consistent with the goal of providing as much relevant information to decision makers as possible. In addition, institutional research has the obligation to educate potential users of the data. This is true of hard data, but is especially true of soft data. The effective use of data by a decision maker can be assured only by an active program of education which facilitates his understanding and acceptance. When an institutional decision maker has a complete package of information, including both hard and soft data, and has been educated in its use, he will have a much better chance of making an enlightened decision, and institutional research will have done its appropriate job.

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[1] Keith W. Evans, "The College Environment: How Freshmen Perceive It," (unpublished Masters thesis, Pennsylvania State University, 1969).

[2] Edward Gross and Paul V. Grambsch, *University Goals and Academic Power*, American Council on Education (Washington, D.C.: 1968).

[3] Rensis Likert, "Human Organizational Measurements: Key to Financial Success," *Michigan Business Review*, May, 1971.

[4] *Ibid.*

[5] *Ibid.*

THE USE OF THE FACULTY CHARACTERISTICS QUESTIONNAIRE IN INSTITUTIONAL RESEARCH AND POLICY FORMULATION

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Without going into an extended exploration of the meanings of the term "policy," we shall assume for the purposes of this paper that the following represents at least one of its meanings: A policy is a statement of principle intended to guide or regulate the actions of some group of people. We further assume that policies are more likely to be successfully implemented if they take into account the feelings and opinions of those to be influenced by them and less successful if they do not.

As an example of an unsuccessful policy statement, we might consider the case of the army captain who was informed by the inspector-general that morale in his unit was low. That afternoon a notice was placed on the bulletin board which read, "Beginning at 0800 tomorrow morning, it shall be the policy in this unit to have high morale." An example in the academic realm of such a policy statement was enunciated by a newly-appointed and rather authoritarian dean of faculty at his first meeting with department chairmen. "It is my policy to have a cooperative working relationship with department chairmen. When I say cooperative, I don't mean that I want you to do what I ask you to do. I mean that I want you to do what I ask you to do *willingly*."

In regard to many policies intended to affect the actions of faculty members, academic policy makers often suffer from a lack of information about the attitudes, values, activities, and satisfactions of faculty members. Most faculty members, having only limited contact with each other, also suffer from a sort of "pluralistic ignorance" of each others' sentiments, values and activities. The usual channels for the expression of the voice of the faculty have a high ratio of noise to information. Faculty meetings are generally poorly attended and are often tedious and inadequate forums for the expression of faculty sentiment. Faculty committees are rarely representative of the full range of faculty opinion, and even when individuals are sincerely motivated, they are hampered by a lack of information. Depending upon the structure and size of an institution, faculty oligarchies or outspoken "squeaky wheels" tend to have unduly high visibility or influence in policy decisions. Our purpose today is to tell you about an instrument by means of which educational policy makers can learn more about the whole range of faculty opinion existing on their campuses.

The *Faculty Characteristics Questionnaire* was developed for the purposes of obtaining systematic information about faculty members' values, attitudes, and activities. It contains questions which deal with a wide variety of issues which confront today's policy makers. For example, it contains items for obtaining faculty opinion about appropriate educational goals for their institution, participation of students in policy making, student-faculty relationships, desirability of changes in the educational program, the importance of various criteria for faculty advancement, and the relationship between teaching and research. Additional questions are concerned with faculty members' activities such as their teaching practices, out-of-class interactions with students, and professional activities. Also included are questions about faculty sources of satisfaction in their jobs and in other aspects of their lives.

Most faculty members are willing to express their views openly on most of the issues included in this questionnaire (and indeed welcome the notion that somebody cares enough to ask them for their opinions). However, some faculty members may wish to remain anonymous. If this is a matter which is likely to be of concern, most of the biographical data items should be omitted if they are likely to be seen as ways of pinpointing individual faculty members.

In addition to being able to use responses to the individual questions, it is possible to use nine scales which were developed by factor-analyzing 138 of the Likert-type items in the questionnaire. The names of the scales and their intercorrelations are presented in Table 1 Three of the scales are concerned with classroom teaching practices, four involve attitudes toward students, one is on attitudes toward current issues in educational change, and the last one is on job satisfaction.

TABLE 1
Intercorrelations and Descriptive Names of Scales (N=954)

Scale Number	1	2	3	4	5	6	7	8	9
1									
2	.41								
3	-.30	-.19							
4	.14	.14	-.33						
5	.17	.37	-.08	.07					
6	.07	-.06	-.19	.25	-.07				
7	-.11	-.23	.27	-.55	-.22	-.02			
8	.20	.31	-.32	.51	.33	.12	-.50		
9	-.09	.03	.10	-.23	.11	-.18	.06	-.11	

Scale Number	List of Descriptive Names
	Teaching Practices Scales:
1	Discursive Practices
2	Classroom Participation Practices
3	Evaluation Practices
	Attitude Scales:
4	Attitude Toward Regulation of Personal Behavior
5	Attitude Toward Personalization of Student-Faculty Interaction
6	Attitude Toward Traditional Extracurricular Activities
7	Attitude Toward Student Motivation
8	Attitude Toward Current Issues in Educational Change
9	Job Satisfaction

The scales were developed from data obtained by distributing the questionnaire in the winter of 1968-69 to 1,559 faculty members at six diverse colleges and universities. The entire faculties in the moderate-sized and small schools were queried. Random samples of approximately 400 professors in each of the two larger schools were selected. Seventy percent of the questionnaires were returned.

It may be useful to note that the total sample was made up of: 96 percent full-time and 4 percent part-time faculty; 80 percent men and 20 percent women; 57 percent with doctorates and 43 percent without; and 26 percent in the humanities, 22 percent in natural science, 30 percent in social science, and 21 percent in professional or applied fields.

It is our feeling that the *Faculty Characteristics Questionnaire*, or parts of it, can be useful to institutional researchers in gathering and summarizing information needed for policy formulation. The information obtained can be used to make explicit the homogeneity or diversity of faculty members' opinions about a wide variety of important issues. Where high agreement exists, this knowledge can serve as a basis for discussion in seminars, senate meetings, committees or retreats to extend community understanding of the issues and the reasons supporting diverse views.

A partial analogy to the suggested use of the *Faculty Characteristics Questionnaire* can be found in the surveys of employee opinion used by some industrial organizations. When such surveys are used in a non-threatening way to elicit opinions about issues which are important to the respondents, when the summary results are made public, and when appropriate administrative action follows from the resulting information, the morale of the organization is improved. Policy makers have a better information base than they usually do to assist in policy formulation. The constituencies who are affected by their policy decisions have a better basis for understanding the rationale behind particular policies.

As an example of the suggested use of the *Faculty Characteristics Questionnaire*, we might consider the responses concerning grading systems presented in Table 2. In the last few years there has been considerable controversy about traditional grading practices. Among the substitutes suggested have been: pass-fail grades only; pass, fail and honors; various optional grading systems; and also the complete abolishing of grades.

TABLE 2
Which One of the Following Grading Systems Do You Think Would Be Best For Your College?

Schools:	1	2	3	4	5	6	Total
1. There should be no grades	3%	2%	4%	6%	2%	3%	4%
2. Pass and fail only	3	8	6	9	6	6	6
3. Pass, fail, and honors	31	35	42	33	39	45	36
4. A, B, C, D, F	34	40	32	28	35	39	34
5. Percentage grades (e.g., 97, 86, 74, 63)	16	5	5	5	7	0	8
6. Other	7	5	8	12	10	3	8
7. Combinations	7	5	3	6	1	3	5

An examination of Table 2 indicates that at the six schools (other than number 1, a large state university) fewer than 50 percent of the faculty respondents favored the traditional practices of assigning letter or percentage grades. Since the time of the survey several schools, including the state university, have adopted at least partial non-standard grading practices. These include allowing students to take one course per term on a pass—fail basis and designating certain courses which may be taken on a pass—fail record basis.

TABLE 3
Should Your College Have a Formal Procedure To Evaluate Teaching Effectiveness?

Schools:	1	2	3	4	5	6	Total
1. Yes	71%	71%	77%	75%	63%	90%	72%
2. No	29	29	23	25	37	10	28

If yes, who should be involved in the process?

Schools:	1	2	3	4	5	6	Total
1. Students	86%	78%	89%	69%	78%	89%	82%
2. Colleagues	85	83	65	63	66	89	76
3. Department chairman	70	69	80	81	74	64	74
4. Dean of the college	30	32	37	53	46	21	36
5. Alumni	31	28	19	15	11	11	23

A second example of the possible use of the *Faculty Characteristics Questionnaire* data in policy formulation is found in Table 3. As can be seen, a substantial majority of faculty at all six institutions favored a formal procedure for evaluating teaching effectiveness. Furthermore, a substantial majority of those who favored such a procedure felt that students should be involved. One of the institutions, number 6, already had such a procedure involving students at the time the questionnaire was administered. Since that time, three of the other institutions have adopted teaching evaluation policies which make use of data from students. We do not wish to imply that the data from the questionnaire were the only or even the chief reasons for adopting such policies, but we do know that the information provided was helpful to some administrators and faculty committees in arriving at their decisions.

In our own studies of faculty we have used the questionnaire to explore a number of topics relevant to policy formulation including: faculty attitudes toward student participation in governance[1]; faculty attitudes toward the reward structure[2]; differences between faculty in different disciplines[3]; the characteristics of faculty who favor and oppose educational change[4]; and the correlates of teacher-student interaction.[5] In addition, we have in process, analyses of the characteristics of faculty members with different kinds of teaching styles and the characteristics,

activities and satisfactions of faculty members at different stages in their careers.

It may be of interest to you to know that a revised version of the questionnaire, which includes 18 scales, was administered to faculty members in nine additional colleges and universities during the spring of 1970. The data are currently being analyzed and the results should be available by September 1971.

Should any of you widh copies of our questionnaires or the Manual of Information for the first form which presents additional information about the questionnaire and its possible uses, you may obtain them by writing to me at the Center for Research and Development in Higher Education at the University of California, Berkeley. We also have available cross-validated questionnaires for use in obtaining student and colleague evaluations of teachers.

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[1] R.C. Wilson and J.G. Gaff, "Student Voice—Faculty Response," *The Research Reporter*, Center for Research and Development in Higher Education, University of California, Berkeley, Vol. 4, no. 2 (1969). Reprinted in C. Kruytbosch and S.M. Messinger (Eds.), *The State of the University: Authority and Change* (Los Angeles: Sage Publications, 1970). Reprinted in *Holy Cross Quarterly*, vol. 3, no. 1 (1969).

[2] J.G. Gaff and R.C. Wilson, "The Relationship between Professors' Views of the Formal Incentive System and Their Career Status," Paper presented at the meeting of the Western Psychological Association, Vancouver, British Columbia, June 1969.

[3] J.G. Gaff and R.C. Wilson, "Faculty Cultures and Interdisciplinary Studies," *Journal of Higher Education*, vol. 42 (1971), pp. 186—201.

[4] J.G. Gaff and R.C. Wilson, "Moving the Faculty," *Change*, vol. 2 no. 5 (1970), pp. 10—12. Also R.C. Wilson and J.G. Gaff, "Faculty Supporters of Change," *The Research Reporter*, Center for Research and Development in Higher Education, University of California, Berkeley, vol. 5, no. 4 (1970).

[5] R.C. Wilson and J.G. Gaff, "Teacher—Student Interaction: The Faculty Viewpoint," in *The Encyclopedia of Education*, ed. by L.C. Deighton (New York: Macmillan, 1971).

AN EXPANDED ROLE FOR INSTITUTIONAL RESEARCH

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INTRODUCTION

This is a proposal that institutional research assume an expanded role which would also embrace academic, fiscal and physical planning. The purpose is to enhance research-based, comprehensive, institutional planning in support of maximizing rational persuasion. Rational persuasion is, of course, part of the continuing search for college and university governance mechanisms.

While this might appear to be an audacious move at a time when institutional research apparently is still suffering from an identify crisis, it is time to replace our present identity with a broader one including the entire research-conclusion-recommendation-decision-planning spectrum. In the magic words of the systems analysts, we may be sub-optimizing our activities when considered in the perspective of the entire institution. In support of this premise, I will suggest that:

1. An office of institutional research and planning should assume responsibility for the coordination of institutional research, academic, fiscal and physical planning; and should lend staff support as requested to the various individuals, committees, tasks forces and councils who are engaged in deliberations involving these functions.
2. The concept of a centralized office is probably in conflict with the prevailing notion of decentralization—everyone doing his own thing. Yet institutional-wide trade-offs, the selection of priorities and allocations, can only be made at one point. If the information upon which decisions are based comes from several sources, it must be synthesized by the user. This materially reduces the value of this assistance. The decision maker should be presented all of the alternates in a single package.
3. To accommodate centralization, and to accept the organizational changes necessary to implement it, it will be necessary for the participants to agree that a crisis of some degree exists in most institutions, and they will have to organize to react to it. Without this perception, probably little will be changed in time to be of help.
4. And perhaps most importantly, an office of institutional research and planning will provide the vehicle and the staff support to encourage continuous, long-range, comprehensive *institutional* planning. Despite the number of self studies conducted in recent years, and the attempt to institutionalize self studies by creating institutional research offices, long-range planning is still not an integral, readily accommodated activity in most colleges and universities.

Every institution must develop a strategy to remain viable. There aren't enough resources for all the constituencies to do and receive everything they wish. This proposal is, therefore, not just an attempt to move the results of institutional research into the main stream of institutional operations, though this is certainly a beneficial by-product; it seeks to encourage a new, comprehensive activity. When institutional research is more directly involved in filling the information gaps identified in planning, its research agenda will also be more relevant to institutional problems. Conversely, if planning is increasingly based on research, both functions will be enchanced.

AN OFFICE OF INSTITUTIONAL RESEARCH AND PLANNING

As colleges and universities grow larger and more complex, it is increasingly difficult for the president or any of his councils to maintain a grasp of the "essence" of the institution. Yet one of their most important functions—the allocation of resources—requires that a choice be made between two competing activities. This choice culminates a lengthy process: setting goals, developing alternate programs to satisfy goals, researching the costs and benefits of the alternates, predicting the long-range implications of a selected combination of programs, translating the selected programs into an annual budget, and comparing actual and predicted performance to improve predictive capability and provide operational controls.

The planning, reserach, allocation, and evaluation functions are inter-related. Each is oriented towards the optimum use of institutional resources in the satisfaction of institutional goals. Yet each of these functions is normally carried out in a different part of the university organization. To bring this all together, there is need for a single office to coordinate comprehensive institutional planning embracing all of its facets—not physical planning by grounds and building; academic planning by the departments and colleges, and fiscal planning by the president and the controller.

Important as the needs might be, at least two conditions are necessary before this approach will be accepted:

1. Colleges and universities may need to adjust their organizations to operate in a more centralized mode.
2. There must be a preceived need to do comprehensive planning, adapted to the unique structure of colleges and universities.

CENTRALIZATION OF THE RESEARCH AND PLANNING ACTIVITY

The focus of the responsibility for research and planning in a single office could create a vision of a small group of persons plotting the destiny of the institution without reference to any constituencies. This is not the goal. The goal is to bring the planning of all constituencies to a

single focal point. This means a greater degree of centralization.

What are the advantages and disadvantages of the current decentralization of institutional research and planning found on most campuses? The rather comprehensive study of the organizational units doing self-studies at the Pennsylvania State University[1] provides an extensive description of decentralization. Exhibit 1 lists the various offices involved. The advantages and disadvantages perceived by the authors would apply to most institutions. They are listed in Exhibit 2. The advantages of centralization appear

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EXHIBIT 1

SELF-STUDY UNITS AT THE
PENNSYLVANIA STATE UNIVERSITY[2]

OFFICE OF THE VICE-PRESIDENT FOR PLANNING

CONTROLLER'S OFFICE
- The Studies Department

DEPARTMENT OF PERSONNEL SERVICES-EMPLOYEE RELATIONS

DEPARTMENT OF MANAGEMENT ENGINEERING

VICE-PRESIDENT FOR ACADEMIC AFFAIRS
- Division of Academic Services
- Scheduling Office
- Division of Instructional Services

CONTINUING EDUCATION
- The Department of Planning Studies

OFFICE OF STUDENT SERVICES
- The Research and Services Program

CENTER FOR THE STUDY OF HIGHER EDUCATION

EXHIBIT 2

ADVANTAGES AND DISADVANTAGES OF
DECENTRALIZED INSTITUTIONAL[3]
RESEARCH AT THE PENNSYLVANIA
STATE UNIVERSITY

ADVANTAGES
- Prevents building and sustaining a monopoly over critical information.
- Prevents disproportionate influence over decisions due to a superior control of factual data by one group.
- Less danger of units being "threatened" by unsubstantiated data arising from the possession of incomplete information in a central office.
- Nurtures an analytical attitude within the operating agencies.
- Generates positive morale and a sense of autonomy.
- Data base for decision-making immediately available to the decision makers in that operating division.

DISADVANTAGES
- Inhibits communication among operating agencies.
- Reports and data may never reach others in the organization who might have use for them.
- Duplication of effort may occur unknowingly.
- Requires some kind of centralized coordinating effort.
- Information may need to be recast for use more widely.
- Agency reports may be factual but not pertinent to institutional problems.
- Danger of goal displacement—overemphasizing agencies' internal problems rather than institutional problems.
- No one agency responsible for the total picture of university operations.
- Gaps may therefore occur between operating agencies.
- There may be no initiative to study university-wide problems dealing with the total university in its environment.

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to be a harboring of resources by preventing duplication, the provision of a single source inquiry point for information, and an increased possibility of a comprehensive grasp of what is going on.

The decentralized organization encourages the initiative of individuals who need not pursue a single set of goals, and also reduces the danger of going in a single direction which may later prove to be a poor choice. This can also mean that for lack of agreement, there is no motion in any direction, or much motion in many directions.

IS CHANGE POSSIBLE?

I am taking the position that the multi-pronged, duplicative effort, characterized by autonomous departments, and decentralized institutional research and planning, was possible in periods of rapid growth and bountiful support. It is now necessary to balance the needs of the entire institution in order to set priorities. At the same time we should be able to sharpen our case for support. I believe the broad, sledge hammer approach used by education has lost its impact. For example, Earl F. Cheit classifies institutions in financial trouble or heading for trouble, as those "who could no longer sustain current program and quality standards, or could not plan to support evolving program growth."[4] This would apply to nearly every institution in the country since the categories of instruction, research, and public service place almost no restraint on the kinds of activities that can be thought up by faculty, students or the public.

Dwight Ladd[5] concluded, after an analysis of eleven college and university self-studies, that there was no change in organization or programs, despite thousands of man-hours of study, unless a crisis was perceived. The crisis engendered an attitude that the move to a new position was preferable to the status quo. Without it, little happened. This condition

will have to be displayed at every institution in order to gain credibility, and it may take long-range projections to prove it.

AN ORGANIZATION TO ENCOURAGE INSTITUTIONAL VIABILITY

How is an office of research and planning accommodated in colleges and universities who are organized to accommodate decentralization? Our present organizations are based on the concept that the most effective leadership would be provided by specialists in academics, student personnel, finance, development, community relations, research, etc. Yet only the president is responsible for the entire organization. As the organization grows larger, the president's ability to grasp its entirety diminishes. It requires that all of the information necessary to make institution-wide trade-offs—academic plans, finances, facility needs, student and faculty concerns, must be communicated to one man. We are seeking a method of presenting the total picture. A centralized staff function will accelerate our ability to provide this information. We seek an organizational entity which will support the president in institutional comprehensiveness, but still not duplicate or conflict with the other levels of the organization who do research and planning but not in an institution-wide mode.

For example, it would appear that having at least two officers with total institutional responsibility would be helpful, e.g., president—Chancellor; president—provost; president—vice president. The success of that combination will of course depend upon their ability to work together, but can halve the president's prime responsibilities, and hopefully raise his average tenure. It is at this level the office of institutional planning and research could function, not necessarily reporting to the president, but to an officer at the institutional "concern" level.

A CASE HISTORY — SANTA CLARA

We are trying a new organizational structure at Santa Clara to bring together institutional research and institutional planning, and to provide staff assistance in support of committees and task forces engaged in these functions. To provide direction for this expanded activity, a dual purpose advisory board has been formed. One of its functions is to review the operation of the office. The second, and more important role, is to advocate a long-range, comprehensive plan for institutional viability.

The members of the advisory board are nominated by the director of the office and confirmed by the president. The membership currently includes vice-presidents, deans and faculty members. Agenda is published, minutes are recorded, and inquiries explored by the staff of the office. The membership rotates as the interests and time commitments of the participants change. There is no concerted attempt to gain campus-wide representation of all of the constituencies because it is not a decision-making group. When opinion profiles are sought, we wish to use survey instruments rather than count on the one or two person samples obtained when students and faculty are sprinkled across existing committees. I believe what we have created is very close to the steering committee of a one-time institutional self-study, but this group has a continuing existence. We have nicknamed this advisory board "the advocates" because the member's function is to advocate a comprehensive, institutional plan. This group "advocates" to the president. Their written recommendations can then be reviewed by any group in the University so that the concern with governance and participation is satisfied.

SUMMARY

This is a description of a new college and university staff unit created to accommodate a number of needs:

1. To integrate instituional research into an activity continuum which includes research, analysis, planning, decision recording, implementation, evaluation, and reiteration.
2. To place increasing emphasis on *institutional* viability and to recognize that long-range, resource allocation trade-offs, can only be made at a single focus point. This centralization is essential when resources are limited.
3. More effective college and university governance requires more sophisticated organizational mechanisms. An approach such as "shared authority" requires greater amounts of information presented in a manner which will support rational persuasion. An office of institutional research and planning can coordinate and provide the necessary staff assistance.
4. The "case" for support must be better developed, documented and presented in the increasing competition for funds from all sources. This is a natural consequence of planning.
5. Since academic constituencies appear to react only to perceived crises, more effective measures of the long-range impact of current events and decisions must be developed. Institutions must learn to react while they still have time to favorably influence their destiny.
6. Advocacy of "what might be" must be injected into research and planning. The academic coalition spends a great deal of time as professional critic.

There is little evidence that substantial numbers of young people will evade higher education in the future. There is evidence that they will be increasingly critical of its nature and how it relates to their lives. There is also evidence that society is decreasing its rate of support of higher education, and is no longer enamoured by the need for higher "quality"—whatever that is. Bringing together the diverse interests of the constituencies, allocating limited resources and stretching those available, will require increasing time commitments by all of the participants. An office of institutional research and planning can contribute significantly to these deliberations.

[1] K.P. Mortimer and David W. Leslie, "Institutional Self-Study at the Pennsylvania State University," Center for the Study of Higher Education, University Park, Pennsylvania, 1970.

[2] *Ibid.*

[3] *Ibid.*

[4] E.F. Cheit, *The New Depression in Higher Education* (McGraw Hill, 1971).

[5] D.W. Ladd, *Change in Educational Policy* (New York: McGraw Hill, 1970).

ACADEMIC POLICY FORMULATION

BENEFITS AND BENEFICIARIES OF INNOVATIONS A RESEARCH MODEL

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One of the most challenging tasks for researchers in higher education today is the evaluation of educational innovations. Throughout the innovative process, researchers are asked to provide information necessary for administrative and educational decision-making. Yet at the same time most researchers themselves are struggling to develop criteria and methods by which evaluations of the innovations may be conducted. The central task in any evaluation is to consider causal relationships between various elements of a new program and the consequences for those involved or affected. Thus, the initial criteria for a comprehensive evaluation follow from determining answers to two principal questions: who is affected by the innovation and what are the specific effects? Those affected may include individuals or groups of students, faculty, administration, employees, the community, facilities and resources. The specific effects can vary, of course, for those affected according to the type of innovation.

In the process of evaluating an "innovation"—the Pass/Not Pass grading option at the University of California at Berkeley—the authors developed a research model, described in this paper, which may serve as the basis for evaluating other educational innovations and which may provide information useful for decision-making.[1] By way of background information, the Pass/Not Pass grading option was first offered to undergraduate students at Berkeley in 1966. The option provides for students to elect up to one-third of all their courses to be graded on a Pass/Not Pass basis while all other courses receive the traditional letter-grading. The innovation of Pass/Not Pass grading is currently utilized extensively by undergraduates. It also should be noted that some form of Pass/Not Pass grading is in effect in approximately two-thirds of all the nation's colleges and universities.[2]

The primary rationale for the creation of the Pass/Not Pass grading option at Berkeley was the educational benefits expected to accrue to students: the encouragement and provision for the exploration of new courses and ideas, greater freedom, greater diversity in course selection, less pressure and more time to think or relax, and the development of greater intrinsic motivation.[3] Also anticipated were ancillary specific benefits for the faculty and administration, as well as certain changes in the environmental press (e.g., campus, classroom, curriculum, teaching methods).

Evaluations of the Pass/Not Pass grading options at other insitutions, judging from a review of the current literature, take two essentially similar approaches. In one, information regarding the effects of and attitudes toward the grading option is summarized in mean scores for the total student population. In the other, traditional classifications of students by sex, class, or grade point average are the bases for mean score comparisons of the same data.[4] In either case the student population is viewed in general and administrative terms. A major fault of such approaches is the failure to provide information essential for understanding and evaluating the specific effects of the Pass/Not Pass grading option (or for that matter, of any feature of the educational environment) on groups of students whose interests and orientations are verifiably different from one another (by empirical inspection) and who therefore are differentially predisposed and receptive to alternative teaching and learning opportunities.

The methodology used in this research takes cognizance of the fact that research findings have repeatedly indicated a wide diversity of students within institutions of higher education.[5] Both intellectual and non-intellectual differences are found among students within any university. An alternative way of clustering those students of like dispositions is by identifying "subcultures" on college campuses—aggregations of attitudes, values, interests, goals, personality characteristics and perceptions.[6] Given these subcultures, one might expect, therefore, to find a wide variety of perceptions of, attitudes toward, and benefits from any such innovation as the Pass/Not Pass grading option. This expectation was the major hypothesis examined by the authors. The problem then became one of defining the different student groups and measuring particular benefits or effects for each group.

The research was designed to explore three major questions. First, could responses of students with similar personality characteristics, value orientations, educational goals and behaviors be identified through a relatively simple questionnaire technique and factor analysis? Secondly, would factor scores from students in these "subcultures" be correlated significantly with their ratings of experiences in courses in which they exercised the Pass/Not Pass grading option? Finally, the major question was whether student subcultures, rather than traditional classifications, would be more interesting and informative in understanding the educational benefits of the innovation.

DEFINING STUDENT SUBCULTURES

A review of current literature revealed several popular methods for determining a methodology to distinguish

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between kinds of students. For example, one procedure for assessing on different campuses selected attitudes, values, and interests of students is the Omnibus Personality Inventory[7] which consists of 385 items assembled into fourteen scales. Such methods, however relevant and reliable, are often impractical in terms of time, cost and availability of resources and are for the most part, more appropriate to total campus profiles.[8] Other measurement tools have been developed to establish the existence of "subcultures" of students on a particular campus as they differ in their goals, attitudes toward college, in their peer group associations, and in their experiences while in college.[9] These, too, are complicated to administer, and their methodology limits the use of the findings.

A relatively simple method of assembling meaningful clusters of student characteristics into subcultures was designed by the authors. A questionnaire was devised to measure a combination of student personality characteristics, value orientations, attitudes, goals, perceptions and behaviors. By means of a short-item semantic differential scale,[10] students were asked to assess their own personality characteristics and value orientations. Other scales in the questionnaire asked students to indicate time spent in educational activities outside the classroom and to rank order their educational objectives. A factor analysis was performed (with varimax rotation) and factor scores were produced.

The analysis revealed three major factors which accounted for most of the variance among students. Three other factors were identified which are not included in the report as they explained only a small portion of the variance. Factor I was labeled as the "academic" subculture. Students in this group rated themselves as more esthetic, claimed high goals for becoming more independent, for relating with other people, pursuing intellectual interests, developing esthetically, increasing moral awareness, and obtaining a broad general education. Factor II was identified as a "vocational" subculture. Students with high scores on this factor characterized themselves as being practical with strong future orientations and prominent career goals in attending college. They also expressed a greater interest in obtaining good grades. In the third factor, labeled "expressives," students rated themselves as having a practical outlook, holding high goals for meeting and interacting with a variety of people, relating with others, learning to enjoy life and to have a good time now.

In addition to the groupings devised from factor analysis, traditional classifications of the questionnaire responses regarding the Pass/Not Pass option by class, sex, major, college, grade-point average, etc., were generated for comparative purposes.

MEASURING THE EFFECTS OF PASS/NOT PASS GRADING

To consider adequately the benefits of the Pass/Not Pass grading option, all aspects of the grading system and options must be understood. With the widespread disagreement over the purposes, values and effects of grading, the task of identifying parameters for evaluation becomes enormous and is made more complicated by the variety of underlying assumptions about learning, motivation, and education that determine or influence attitudes toward grading. Measuring the effects of any one new feature of an educational environment is a difficult task under the best of circumstances. When the innovation is operating within the traditional system, the identification of specific casual benefits raises serious methodological problems. While some effects can be theorized and predicted, the overall effects may be expected to be minimal and subtle.

A number of important efforts to characterize educational environments have been made in recent years, and from one point of view, it would have been useful to attempt to relate "press" to the kinds of perceived changes in studentes noted above. However, since the intent of the research undertaken here was to assess the impact of only one feature of that environment—the Pass/Not Pass option—it alone was selected as the independent variable. Needless to say, it was recognized that such an abstraction from the total press is arbitrary, given the interactive patterns of the many variables comprising the environment.

When the Pass/Not Pass grading option at Berkeley was implemented, students and educators expected many advantages to accrue to the campus as a whole. The authors sought to operationalize these into concrete terms for measurement by using several schema found in the literature. In addition to determining the perceived effect on the student personally, the questionnaire sought to evaluate perceived changes in the classroom environment and in the campus as a whole. Here again, factor analysis was employed to reduce a large number of variables to smaller yet more meaningful groupings. Finally, to give the research a more immediately practical edge, sections of the instrument were used to ascertain student motivations for enrolling in Pass/Not Pass courses and student attitudes toward extension of the option in terms of additional courses to be covered.

To summarize, the questionnaire first attempted to group students according to orientation or disposition into "subcultures." It then asked for motivations for enrolling, changes in self, changes in classroom and campus. Finally, students were asked for attitudes toward extension of the system. All questionnaire items were set in the form of a seven-point scale in which the student was asked to indicate both the extent and direction of change.

FINDINGS USING TRADITIONAL CLASSIFICATIONS

Frequently in the research on Pass/Not Pass options cited above, the conclusion has been reached that the objectives of the innovation had in fact been for the most part achieved. Replication of that research for the Berkeley campus as a whole confirmed those findings. The option apparently was being used to relatively good effect, in accordance with the intentions of the faculty and administrators who initiated it. Importantly, however, there appeared to be little variation in this finding for groups of students classified in traditional ways—i.e., by major, sex, year in school, etc. The resulting correlations are difficult to

interpret and may, for this sample, be spurious. Perhaps more remarkable than the few significant correlations obtained is the relative absence of relationship to class, sex, GPA and major—the usual classifications of students used in institutional research. In other words, using these categories, it could be concluded that the success of the Pass/Not Pass system applied uniformly regardless of traditional classifications of types of students.

FINDINGS USING FACTOR ANALYZED SUBCULTURES

After the subcultures were defined by factor analysis, the three major subcultures derived were compared to the five major categories of the effects of Pass/Not Pass grading: (1) motivations for electing Pass/Not Pass grading, (2) changes in classroom environment, (3) change in campus environment, (4) personal changes, and (5) attitudes toward continuation or extension of the Pass/Not Pass grading option. The items in the categories of personal change and attitudes toward continuation or extension of Pass/Not Pass did not lend themselves to factor analysis, so these items were correlated individually with the subcultures. Table 1 describes the correlations of the three subcultures with the changes in general, while Table 2 gives a more specific breakdown of the personal changes.

TABLE 1
Correlations Between Factor Scores (Varimax Rotation) For Student Subcultures and Student Perceptions of Pass/Not Pass Grading (N=120)*

	Academics	Vocationals	Expressives
Reasons for Electing P/NP			
Requirements fulfilled	.20		
More time, less work		.23	
Exploration & experimentation	.19		.21
Change in Classroom Environment			
Improved student-teacher relations	.27		.27
More course involvement			
Less pressure & competition			
Change in Campus Atmosphere			
Better academic interests			.33
Better communications			
Less pressure & time			
Personal Change in Students			
Cognitive (see Table 2 for details)	many	none	some
Affective	many	none	some
Attitudes Toward P/NP			
Discontinue option			
Continue option the same		.19	
Extend option to 2/3 of courses		-.25	.22
Use P/NP for all courses		-.41	
Use no grades at all	.20	-.39	

*All correlations reported are significant at the .05 level or greater

TABLE 2
Correlations Between Factor Scores (Varimax Rotation) For Student Subcultures and Perceived Personal Change From Pass/Not Pass Grading (N=120)*

	Student Subcultures		
Perceived Personal Change	Academic	Vocationals	Expressives
Excitement about learning	.23		
Exploration of subjects in depth	.33		.11
Learning how to learn	.44		.30
Permanence of knowledge acquired	.45		.18
Ability to evaluate self	.32		.26
Ability to delay personal rewards	.30		.17
Spontaneity	.33		.19
Energy level—working to capacity	.32	.13	.36
Motivation	.37		.37
Pursuit of new ideas	.27		.36
Artistic interests and activities	.28	-.17	.25
Awareness of problems of society	.34		
Anxiety level	.13		
Personal relationships with other students	.32		.16
Breadth of interests and knowledge outside major	.25		.26
Breadth of interests and knowledge inside major area	.36		.10
Clarity of personal values	.28		.16
Personal relationships with teachers	.34		.25
Independence of action	.38	-.13	.24
Creativity	.48		.12
Enjoyment of classes	.28		.17

*Only correlations greater than .10 are recorded
Correlations greater than .19 are significant at .05 level or better

In reviewing the correlations between the three subcultures of students and student perceptions of the grading option, significant differences between the groups are revealed in Tables 1 and 2. Those in the academic subculture, for example, characteristically appear to use the Pass/Not Pass grading option to explore new subjects (without regard to maintaining their grade point averages) or to take required courses. In their experiences with Pass/Not Pass grading, the academic subculture perceived significant improvements in student-teacher relationships but did not perceive significant changes in the campus as a whole. The most interesting findings were the great number of personal benefits the academic subculture say they received as a result of their Pass/Not Pass grading experience.

Table 2 illustrates the large number of significant correlations with personal changes for the academic students, clearly in sharp contrast with those of the vocational subculture and also higher than those of the expressive subculture. Despite the positive experiences indicated by students in this category, there were no significant correlations with desires for continuation or extension of Pass/Not Pass grading. However, the academic group did show a positive correlation for wanting a system of no grades at all established. Perhaps this group does not want extension of the Pass/Not Pass grading option within the grading system, because of their high educational aspirations and desires to enter into graduate school. Yet if the system could be changed to totally remove the need for grades, this group would feel this desirable for their personal growth.

The vocational subculture differed markedly from the other groups in regard to their experiences with and attitudes toward the Pass/Not Pass grading option. Generally the students in the vocational group elected the grading option to provide more time and reduce their work pressure in difficult and time consuming courses. The vocational group did not perceive any changes in the classroom environment or the campus atmosphere as a result of the grading option, nor did they feel personal changes or benefits as a result of experience with the grading option. Scores of students in this category correlated highly with wanting the Pass/Not Pass grading option left at the same level and definitely did not want any extension of the option beyond the present level.

The students labeled as expressives also were unique in their perceptions of the grading option. They elected the Pass/Not Pass grading option to explore new or interesting subject areas without regard for maintaining their grade point averages. The expressive group perceived significant changes in the student and teacher relationships within the classroom and found a change in the campus atmosphere in the area of academic interests and intellectual excitement. This group also perceived significant benefits for themselves on the majority of items measured. Scores for the expressive group, reflecting their positive experiences and feelings toward the grading option, were correlated positively with their wanting to extend the option to two-thirds of all their courses.

SUMMARY

This paper presents a model for evaluation of the impact of educational innovations, illustrated here with the Pass/Not Pass grading option at Berkeley. The results of this exploratory study are not conclusive. They do, however, point the way toward the use of a new and simple design for identifying subcultures of students on a campus while correlating membership in it with perceived effects of an innovation. The subcultures defined by factor analysis of personality characteristics, value orientations and educational and personal goals provided more valuable information for evaluation of the grading option than the traditional demographic classifications of student groups. The latter offered virtually no information about the kinds of students who were most able to take advantage of the innovation and about the changes which different types of students experienced. By correlating the effects of the innovation with membership in the subcultures, it was possible, on the contrary, to determine far more exactly both benefits and beneficiaries.

It would appear that given the diversity of students on a campus, the design of educational experiences might better be directed to addressing groups of students with similar characteristics and dispositions to grow and learn regardless of their administrative location on campus. While traditional classifications are useful for certain purposes—e.g. between campus, longitudinal comparisons and projections of future enrollments—there are apparently special advantages to assessing educational environments and innovations as they are perceived by subcultures of students drawn from all parts of the campus. As is revealed in this study of the Pass/Not Pass option at Berkeley, the use of traditional measures would have resulted in a general acceptance of the option. Analyzed by subculture, it was clear that unique benefits accrued to certain portions of the student population, but that not all students were able to take advantage of it. Such findings allow for more sophisticated design of appropriate educational environments for all students.

[1] The authors wish to acknowledge the assistance of Sidney Suslow and his staff at the Office of Institutional Research, University of California, Berkeley.

[2] Leroy S. Burwen, "National Survey of Pass-Fail Grading," and C.J. Quann, "Pass-Fail Grading: What Are the Trends?," two papers presented at American Educational Research Association, New York, February, 1971.

[3] Charles Muscatine, *Education at Berkeley*, Select Committee on Education Report for the Academic Senate (Berkeley: University of California, 1966).

[4] Robert A. Feldmesser, *The Option: Analysis of an Educational Innovation* (Hanover, New Hampshire: Dartmouth College, April, 1969); Marvin Karlins, Martin Kaplan and William Stuart, "Academic Attitudes and Performance as a Function of Differential Grading Systems: An Evaluation of Princeton's Pass-Fail System," *Journal of Experimental Education*, vol. 37, Spring 1969; and James Morishima and Sidney S. Micek, "Pass-Fail Evaluation: Phase I and II: Grade Distribution Analysis and Questionnaire Analysis," unpublished report, Office of Institutional Research, University of Washington, Seattle, April, 1970.

[5] Paul Heist and T.R. McConnell, "The Diverse College Student Population," *The American College: A Psychological and Social Interpretation of the Higher Learning*, ed. by Nevitt Sanford (New York: John Wiley and Sons, 1962).

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[7] Paul Heist and George Yonge, *Omnibus Personality Inventory, Manual* (New York: The Psychological Corporation, 1968).

[8] Alexander W. Astin, "Measuring Student Outputs in Higher Education," *Outputs of Higher Education*, Western Interstate Commission for Higher Education, Boulder, Colorado, July, 1970.

[9] Alexander W. Astin, "Recent Studies of College Environments," paper read at American Personnel and Guidance Association, Minneapolis, 1965; George C. Stern, "Characteristics of the Intellectual Climate in College Environments," *Harvard Educational Review*, vol. 33, Winter 1963; Clark and Trow, *op. cit.*; Jonathan R. Warren, "Student Perceptions of College Subcultures," *American Educational Research Journal*, vol. 5, March, 1968; and Gottlieb and Hodgkins, *op. cit.*

[10] Methodologically similar to Hanan C. Selvin and Warren O. Hagstrom, "The Empirical Classification of Formal Groups," *College Peer Groups*, ed. by Theodore M. Newcomb and Everett K. Wilson (Chicago: Aldine Publishing Co., 1966), and to Mary Jo Grinstead and Cecil L. Gregory, "Relevant Concepts via the Semantic Differential with Factor Analysts: An Empirical Test," *The Sociological Quarterly*, vol. 10, Summer 1969.

ACADEMIC POLICY AND ADVANCED PLACEMENT EXAMINATIONS AT THE UNIVERSITY OF VIRGINIA, 1962–1969

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INTRODUCTION

The Advanced Placement Program is in its seventeenth year as a part of the College Entrance Examination Board's program. "The Advanced Placement Program is based on the belief that many students can complete college-level studies while they are still in secondary school, and on the desire of participating institutions to encourage and recognize this achievement."[1]

The College Entrance Examination Board administered Advanced Placement Examinations to 55,442 students from 3,186 secondary schools during May 1970. These Advanced Piacement Examinations were graded and the grades converted to a five-point college-level Advanced Placement scale: 5 = extremely well qualified, 4 = well qualified, 3 = qualified, 2 = possibly qualified, 1 = no recommendation.

The College of Arts and Sciences, the School of Architecture, and the School of Engineering and Applied Science at the University of Virginia have participated in this program for a number of years, and records are available for students who took Advanced Placement Examinations and who entered the University in the Falls of 1962 through 1969. Until the Fall of 1967 there was no uniform policy for recognizing the scores made on the Advanced Placement Examinations. Each department decided what should be done with each A.P. student. If a student's record was judged to be good enough he was given Advanced Placement. This meant that the A.P. student could start his study at the University, above the level of the introductory course, in the field or fields in which he took the A.P. Examination, and no substitution of the introductory course could be used to meet degree requirements for graduation of a student given Advanced Placement. Occasionally, the A.P. student was given Advanced Standing, which meant he was allowed to omit the introductory course and receive credit for it toward a degree. Little Advanced Standing credit was granted in this manner until 1966. Beginning with the entering class of 1967, it became the policy of the University to give Advanced Standing credit to all entrants who took A.P. Examinations and made a score of 4 or 5. The change in policy was approved by the Faculty of Arts and Sciences at their May 1967 meeting. Decision was still left with individual departments whether or not to allow Advanced Standing credit for scores of 3, 2, or 1.

Since the 1967 decision, the Office of Institutional Analysis has analyzed the academic records of students entering the University of Virginia from 1962 through 1969 who took the Advanced Placement Examinations. The first report was completed in May 1968, "The Academic Record of Students Entering the University of Virginia 1962–1967 Who Took Advanced Placement Examinations." A second report was completed in June 1969, which included the entering class of 1968. Finally, a third report which extended the analysis through the entering class of 1969 was completed in June 1970.[2] These reports were distributed to administrative officers, deans, and departmental chairmen.

The Office of Admissions at the University of Virginia has used these studies since 1968 to inform the academic deans and departmental chairmen how students in previous years had achieved in the subject areas in which the A.P. Examinations were administered. Additional findings in these reports which were emphasized included: number of students taking A.P. Examinations by field, number of Advanced Standings and Advanced Placements given by field, credits earned in courses of same field as A.P. Examinations, grades earned in courses in same field of A.P. Examination, mean grade point average in A.P. Examination field and in all subjects, and mean grade point average during the first semester for students taking the A.P. Examinations by A.P. score and A.P. fields.

PURPOSE OF THE STUDY

The purpose of the study was to analyze modifications in implementing academic policy of the Advanced Placement Program at the University of Virginia in relation to research conducted by the Office of Institutional Analysis. Specifically, the question considered in the study was, "What has been the role of institutional research in influencing academic policy concerning the Advanced Placement Program at the University of Virginia?"

PROCEDURES

The procedures for analyzing institutional analysis reports in relation to academic policy of the Advanced Placement Program included structured interviews with persons in the appropriate departments who were responsible for evaluating the A.P. Examination scores in their subjects. The structured interview covered the following topics:

1. Consideration of the reports prepared by the Office of Institutional Analysis in relation to implementing academic policy of the Advanced Placement Program.
2. If academic policy had changed, what was the nature of the changes and what sources influenced the changes?
3. Importance of institutional research reports concerning academic achievement of A.P. students.
4. Desired changes in research reports on A.P. students conducted by the Office of Institutional Analysis.

Also, correspondence between the Office of Admissions and appropriate schools and departments was perused in relation to the Advanced Placement Program and changes in academic policy formulations.

FINDINGS

Findings of the study were based upon diagnosis of the personal interviews with persons in the departments making decisions on A.P. students and with the Associate Dean of Admissions who is directly responsible for coordinating the Advanced Placement Program at the University. In addition, the findings were based upon a content analysis of the correspondence between the Office of Admissions and respective departments relating to the Advanced Placement Program.

Interviews with Faculty Representatives Reponsible for Advanced Placement Program in Selected Departments

There was one departmental faculty representative out of nine who had studied research reports completed by the Office of Institutional Analysis concerning Advanced Placement students. But, after these reports were examined with the faculty interviewed, it was noted that all of them strongly urged that these reports continue to be made by the Office of Institutional Analysis for future decision-making purposes with the A.P. students.

All of the faculty representatives reported that the major influence in assigning Advanced Placement or Advanced Standing was due to the role of the Office of Admissions.

Six of the nine faculty representatives had very favorable attitudes toward the Advanced Placement Program. These six departments also were the most progressive and lenient in granting Advanced Standing and credit to A.P. scores of 3 and sometimes scores of 2. They accepted the secondary school advanced courses as equal to college-level work unequivocally.

There still remained three departments out of nine which were hesitant to grant Advanced Placement or Advanced Standing beyond the limits described by the standing academic policy. The reasons for this hesitancy were noted by the faculty to be the unwillingness of their departments to accept or equate the secondary school Advanced Placement courses with college-level work, especially equal to the introductory courses offered at the University of Virginia.

Intuitive judgment by most of the faculty concerned and historical academic records of A.P. students continued to provide support for lenient policies in granting Advanced Standing to A.P. students.

Interview with Representative from Office of Admissions

The strongest supporter of the Advanced Placement Program at the University of Virginia was the Associate Dean of Admissions. He reported that some of the initial interest in the A.P. Program at the University emanated from secondary school counselors in the State of Virginia. The counselors' concern was, basically, that some of the best graduates from Virginia's public schools were going to the prestigious Ivy League universities, in part, because these institutions were more considerate of and accepted work completed in Advanced Placement courses offered at their secondary school level than was the University of Virginia. With the problem of losing these excellent students to institutions of higher education outside Virginia, the Associate Dean of Admissions encouraged the College of Arts and Sciences to recognize and accept Advanced Placement work at the secondary school level for college credit. The next step which the Associate Dean of Admissions took was to request that the Office of Institutional Analysis conduct a study on the academic performance of A.P. students entering the University of Virginia. He subsequently used the institutional research reports to recognize the academic achievement of students who completed Advanced Placement Programs at the secondary school level and entered the University of Virginia. These reports indicated that students in many fields who achieved an A.P. score of 3 had a mean grade point average in the A.P. field and in all subjects similar to those of students with A.P. scores of 4 and 5. The A.P. scores of 4 or 5 automatically awarded a student with Advanced Standing and credit toward a degree. From the use made by the Office of Admissions of the institutional research studies concerning the academic achievement of students taking A.P. Examinations, Advanced Standing given to A.P. scores of 3 increased from 11, or 19% of all Advanced Standings awarded, in 1967 [10 in mathematics and one in physics], to 28, or 36% of all Advanced Standings awarded, in 1968 [13 in mathematics, 12 in chemistry, two in physics, and one in European history], to 144 or 85% of all Advanced Standings awarded, in 1969 [51 in English, 30 in American history, 24 in mathematics, 15 in chemistry, 14 in European history, three in Latin, three in physics, two in French, and two in Spanish].

The concerted and supportive efforts of the Admissions Office were also reflected in that the per cent of students granted Advanced Placement increased from 7.3% of those taking A.P. Examinations in 1966 (before uniform academic policy), to 32.6% in 1967 (after uniform academic policy), and to 69.0% in 1969. The semester hours of credit awarded increased from 96 in 1966, to 420 in 1967, and to 1191 in 1969.

The Associate Dean for Admissions finally reported that the desirable changes in academic policy of the Advanced Placement Program have provided strengthening effects on other related academic programs for outstanding students at the University of Virginia. These programs included: (1) Echols Scholar Program which is designed to challenge and stimulate exceptionally able entering students, (2) Three-Year Baccalaureate Program which is designed for well qualified students, particularly those who enter the College of Arts and Sciences with Advanced Standing credits and are able to carry a course-load slightly above the normal load, and (3) Honors Program which is designed for outstanding students who complete a two session program of independent work under tutorial guidance in one or more academic departments.

Correspondence Between Office of Admissions and Appropriate Departments Concerning Advanced Placement

Correspondence between the Office of Admissions and the departmental chairmen, pertaining to students taking A.P. Examinations, indicated that the Office of Admissions suggested, on the basis of the research reports completed by the Office of Institutional Analysis, certain action to be taken by the departments. The Office of Admissions assured that students with A.P. scores of 4 and 5 were automatically granted Advanced Standing with credit. The automatic assignment of Advanced Standing with credit was conducted by the Associate Dean of Admissions, and the decision was then made known to the appropriate departments. Whenever appropriate, it was encouraged by the Admissions Officer that students with A.P. scores of 3 be given Advanced Standing, when institutional research reports gave valid support.

The Associate Dean of Admissions was also directly instrumental in establishing the academic policy concerning the Advanced Placement Program at the University of Virginia. He drafted the original statement describing the current academic policy, and the ideas and support for his role in this endeavor were based upon the research reports on Advanced Placement students conducted by the Office of Institutional Analysis.

SUMMARY

The findings of three years of study concerning academic achievement of entering students who took the Advanced Placement Examinations at the University of Virginia from 1962 through 1969 have demonstrated the role of institutional research in modifying academic policy. The importance of the analysis of academic records of students taking A.P. Examinations has revealed that those students with scores of 3 perform as well in the A.P. fields and in all subjects as many students with A.P. scores of 4 and 5. Such evidence has influenced several department chairmen to consider institutional research reports when making decisions and modify academic decisions accordingly.

The three analyses of academic records of students entering the University of Virginia between 1962 and 1969 who took the Advanced Placement Examinations have also served to inform the Faculty of Arts and Sciences of the high level of teaching and learning taking place at the secondary school level. The academic records of students taking A.P. Examinations and entering the University of Virginia have shown that some students can complete college-level work while still in secondary school. In addition, they have shown some University professors that some secondary school teachers are quite capable of conducting college-level courses at the secondary school level. Not only have some University professors been made aware of the quality of teaching and learning taking place at the secondary school level, but also, they are willing to accept the achievement records and award college credit for it.

Additionally, the secondary school teachers are motivated to maintain and continuously improve the kinds of programs and level of instruction at the secondary school level. Finally, the students are motivated to achieve at a high level and complete college-level work while still in a secondary school.

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[1] *A Guide to the Advanced Placement Program, 1970-71*, College Examination Board, Princeton, 1970, p. 10.

[2] "The Academic Record of Students Entering the University of Virginia 1962-1969 Who Took Advanced Placement Examinations: A Third Report," Office of Institutional Analysis, University of Virginia, Charlottesville, June 1970.

INSTITUTIONAL ACCREDITATION IN TRANSITION: WILL INSTITUTIONAL RESEARCH BE PART OF THE SOLUTION OR PART OF THE PROBLEM?

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The purpose of this paper is twofold. First it will be an attempt to describe the nature of the transition taking place in institutional accreditation on a nationwide basis. The changes which have been proposed as a result of a self-study sponsored by the Federation of Regional Accrediting Commissions of Higher Education are significant. Since the most important focus of any institutional evaluation is the self-study conducted by the institution, and since the campus director of institutional research is or should be a keystone in the self-study process and related academic policy formulation, the changes in institutional accrediting activity and the likely results of the changes should be understood by institutional research personnel. As a complement to this discussion, some of the aspects of the self-study process which is encouraged in the Middle States region of the country will be described in detail.

The second purpose of the paper will be to focus specifically on the interaction between the institutional research director on the campus and the self-study process employed in the evaluation. This will be viewed in light of the changing emphases in the institutitutional accreditation process and in the light of past experience in the Middle States region. The fundamental importance of an enlightened approach by the institutional research director on the campus will be stressed.

INSTITUTIONAL ACCREDITATION: SOME BACKGROUND

Institutional accreditation is performed for two reasons: first, as part of an accountability function, in which colleagues hold an institution accountable to live up to its own stated objectives; and second, as an attempt to improve institutions and more specifically the educational process. Due to an increasing focus on institutional self-study and the analysis of outcomes, the accreditation process at its best has become quite effective; at its worst, it is a complete waste of time, an often frenetic jumping of hoops featuring useless data collection.

The process of institutional accreditation has evolved over the last 50 years through a number of stages. In the early stages, membership in a rather exclusive group of accredited institutions was sought by submitting a simple 2 or 3 page questionnaire and hosting some visitors from neighboring institutions. Criteria were quantitative and not related to variations in institutional type of objectives. This gave way gradually to the system employed over the last 10–15 years. The quantitative standards are gone, and the present system employs a set of general, non-quantitative, standards (or characteristics of excellence, conditions and responsibilities, etc.) and uses a qualitative judgment of the extent to which the institution is fulfilling its own stated objectives. The following materials which are taken from the Middle States Commission on Higher Education's *Institutional Self-Study Handbook*[1] summarize the current approach.

Basic Philosophy of the Commission

1. The primary emphasis of all Commission activities is on strengthening institutions.
2. The Commission tries to *de*-emphasize accreditation per se, while at the same time providing necessary accountability.
3. The Commission uses qualitative (not quantitative) evaluation in terms of an institution's own objectives.
4. The Commission is not a standardizing agency and does not employ institutional comparisons.
5. The Commission actively supports innovation.

The Evaluation Process

1. The institution looks at itself and speaks to the Commission via *self-study*.
2. Peers give evaluation and advice via the *evaluation report*.
3. The *institution responds* to the team report through a direct communication to the Commission.
4. The *Commission acts* on the basis of the information gained in the first three steps.
5. The institution *continues to consider* and act on the results of its own self-study and the advice it has received.

The Essential Nature of an Institutional Self-Study

1. What are this institution's *objectives* and what obligation does it have?
2. Are the *objectives appropriate*? Now? Here? For its constituency?
3. Are all the institution's *activities consistent* with its objectives?
4. Are the programs and activities *designed to achieve the objectives?*
5. Are the *resources available* to carry out the programs? Will they continue to be available?
6. Is there reason to believe the *objectives* are being achieved? What is the evidence?

CHANGES IN PROGRESS

The accreditation picture is still not a static one. A number of significant changes are in process, and some

substantial pressures for additional change are at work. As seen from the Middle States' experience, the following changes have either occurred in the last year or so or are being executed at present.

1. Several very useful alternatives have been developed to displace the traditional questionnaire approach to institutional self-study. They include: an individualized but comprehensive non-questionnaire approach; a selected topics approach; a comprehensive approach with special emphases; and, an approach based largely on an existing adequate program of planning and institutional studies. Middle States also employs in selected institutions an evaluative approach which is linked to an instructional device called a Case Study. The choice of the approach depends on the answer to the basic question, "Does the institution have a basic and complete understanding of its objectives for its programs and the outcomes of these programs in relation to the objectives desired?"
2. Evaluator training programs have been instituted in order to strengthen the process and ensure greater consistency.
3. A great broadening of the representation of institutional types and individual backgrounds in the evaluator pool has been achieved.
4. First experiences are being gained with institutions striving to employ a partial or total systems approach in their educational programs.
5. Efforts are being accelerated to place reliance on outcomes analysis by institutions just as rapidly as new and useful approaches can be developed.
6. Much greater contact by staff members and consultants in the field with planning and self-study committees at institutions is now employed.
7. Attempts to reduce duplication of accrediting activities between institutional and special or program agencies are being vigorously pursued.
8. Great emphasis (sometimes over unbelieving institutional opposition) has been placed on making the self-study period a useful period of analysis, planning and idea development yielding a brief readable written document, as opposed to the 300-400 page unreadable questionnaire-oriented tomes of some years ago, the production of which was usually diverting and wasteful.
9. Lay advisors are being added to help in the process of improvement.

THE THRUST FOR THE FUTURE

Despite these efforts and some obvious progress, much remains to be done; many critics remain, and new challenges, present themselves each year. In a classic example of taking a large dose of the medicine prescribed for others, the regional institutional accrediting groups, through their coordinating agency FRACHE (the Federation of Regional Accrediting Commissions of Higher Education), sponsored a thorough self-study of institutional accrediting. After a year of study which included a survey, visits to each regional office, participation in team visits and Commission meetings in each region (something, by the way, the most vocal critics of the process have not done at all), and a massive excellent comparison of policies and procedures across the country, a team produced a set of recommendations for structure, procedure, and policy changes embodied in what has come to be known as the Puffer Report[2]. The Report calls for a fundamental transfer of some power and authority by the regionals to a strengthened FRACHE in order to ensure consistency in basic approach and policy among the regionals (a lack of which has been the paramount criticism of regional accrediting to date) while at the same time maintaining the actual accrediting process on a regional basis with some necessary regional differences in specific procedures. The Report calls for increased lay influence, greater research on educational outcomes, increased appeal mechanisms, and mechanisms for accreditation of institutional types not now serviced. Debate on the Report is underway, and guided by feedback from institutions and other agencies, evidence of the further modernization in the accrediting process is already noticeable.

The foregoing has been an attempt to describe the evolution which is underway in the institutional accrediting process. What should be the relationship between institutional research personnel and this changing landscape? In the title of this paper I ask whether institutional researchers will be part of the solution or part of the problem. Let me state what I think that may mean.

First and foremost, I think institutional research people can be in the vanguard of the solution—at the very cutting edge—if they can marshall effectively their efforts and make real progress on the question of measuring meaningfully, reliably, and relatively simply the outcomes of the educational process. This is *the* key to future progress. The overwhelming emphasis of the past by all concerned on form and process, on buildings, salaries, and square feet, on ratios and the like, useful though it has been, is really dabbling around the edges. We must now develop effective approaches to relate educational outcomes to institutional purposes and objectives at the cours, program, and college level. Some of the systems approaches being attempted at the two-year college level employing measurable behavioral objectives are a good start, but only a start.

Beyond this, I would say that institutional researchers at their own institutions can help to be part of the solution if they can approach the next accreditation review as a positive, creative, integral part of an effective process of analysis and planning, and not something special, a hurdle to be jumped while the important business of the college waits its turn. This requires the assumption by the institutional research officer of a key role in the self-study or planning process in order to have a continuing influence on academic policy formulation via this mechanism. Is he knowledgeable about the new approaches in institutional accreditation or about the state of the art in the analysis of educational outcomes? If he is little more than a data-generating describer of the process at his institution, I'm afraid he is part of the problem.

[1] *Institutional Self-Study Handbook*, Commission on Higher Education, Middle States Association, New York, 1971.

[2] *A Report on Institutional Accreditation in Higher Education* (published summary of the "Puffer Report"), Federation of Regional Accrediting Commissions of Higher Education, Chicago, 1970.

INSTITUTIONAL RESEARCH AND OCCUPATIONAL PROGRAM POLICYMAKING IN COMMUNITY COLLEGES

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Occupational program policymaking in the nation's community colleges has often been a matter of putting out fires on horseback. With rapid community college development, the long-range planning of occupational programs has typically been the momentary inspiration of a trustee, administrator, or faculty member. It has not usually been the result of a carefully conceived and scientifically methodical procedure. This situation is changing, and institutional research offices can help it to change.

I would like to try to identify some of the areas of information gathering and planning analysis that represent the bare bones for effective planning, that is, identifying alternative futures rather than the mere filling in of forms. The focus here is on *planning* rather than *the plan*.

It seems to me that we are at a time when within-state information flow must be dealt with in such a way as to enhance rather than compromise local autonomy. Information gathered and transmitted only for state or federal level analysis must be seen as a threat to local decision-making. George Orwell's vision of 1984 comes to mind. If, however, the state network for occupational education is properly organized, the community college will be able to ferret out the local meaning of the local data it must gather and report, and make locally appropriate policy and operating level decisions on the basis of these data. Nor will the state level reviewers readily override the hard logic of priorities based on hard data, substituting instead priorities based on one person's whim and vague impression, if the results of a more rational process are made public and vigorously pursued in the public forum.

A few words of background are in order. Community college career programs and their planning on the basis of scientific research evidence may be an instance of something bigger in higher education. A month ago I took advantage of a layover in the Atlanta airport to talk mutual interests by phone with Tex Schietinger of the Southern Regional Education Board. I was grumbling about HEGIS and WICHE, that the tendency was for row-sums and column-sums to be reported and aggregated at the state and federal level. This left no adequate allowance for local meaning to be pulled out of the local covariance being reported. Aggregates of rows and columns would then be related for the benefit of state and federal legislatures. What I wanted to see was more local appreciation of this kind of relationship. What Tex said to me was, "But *that's* institutional research." Without being aware of it I had been blowing my own professional horn. It so happens, though, that it's a professional horn I believe in.

We are often up against decades and even generations of inertia in the information game, especially when it comes to such things as manpower data. Unemployment problems between World Wars demanded an industrial society's information to be accumulated and analyzed at a national level. The information explosion, the computer, and the realities of a post-technological society have made this old approach to manpower information obsolete. This sets up a situation in which the community college institutional research office can play a constructive part.

If we start looking at the meaning of local covariance, as institutional research makes possible, we can start contributing hard evidence for policy-making. A community college's occupational and career programs can be related to local job opportunities in such a way as to be sensitive to changing employment supply and demand patterns.

Last year, on the basis of survey data, I analyzed career program planning information flow in Eastern Seaboard states from New York to North Carolina. This survey revealed the practicality of state level review of data relationships (ratios and percentages) to appraise the reasonableness of local planning. Two major time series categories were involved: opportunities by occupation and relevant manpower supply projections. These were federally required ingredients for state and local vocational program planning. There are implications here for college policy-making and planning.

General and specific conclusions drawn at the time of this survey included the following: (a) information used to establish community college curriculum alternatives is inadequate for implementing vocational programs operationally; (b) local occupational programs must approximate state planning targets in the aggregate but not on the average for state plans to be "telling the truth"; (c) a useful information element to focus planning is student contact hours by instructional program; (d) most communities need a system for annually updated local manpower supply estimates (5 year forecast); (e) because of the intermingling of vocational and non-vocational coursework, a weighted index of career and occupational coursework in the community college is needed to measure impact or program penetration effectiveness in the local community; and (f) program completions are a practical measure of program results at the state level and for consideration by legislators.

Since 1968, strong movements have been under way in the Labor Department and in the U.S. Office of Education to implement federal laws on planning occupational and career programs. The result is an improving data base for assessing local supply and demand by occupations. There are obvious implications for the planning of career offerings in the community college. This is not to say that the institutional researcher identifying alternative futures for policymakers is to rest content with the data demanded by federal funding. Employers will also have to be surveyed or sampled to determine community college training opportunities and program impact. Competing sources of manpower supply will have to be reached to get a complete picture of longer-range

manpower supply. But sampling tactics, questionnaire schedules that are brief and to the point (and interested in the employer and in service), and the use of the telephone rather than the foot promise to make the "extra work" manageable.

Figure 1 illustrates the potential information flow associated with federal funding of career programs. Local employment security agencies have a charter and are beginning to come across with *manpower demand* information. This means that the local public school system and the public community college can reasonably expect information on projected job opportunities by occupation in the five-year future. On the basis of educational requirements for different jobs, decision makers in the public schools and the community college can establish their preferred targets on the *manpower supply* side of the equation.

There are some obvious hazards involved. It is unlikely that all parts of the national, state, and local information network will work equally well at all times. The responsible unit of the local employment service may not be doing its job. The public school system may represent the ponderous "Establishment" vis-a-vis the young and flexible community college. The compromises and mutual concessions for planning may be a problem. But the mechanism is there, especially in the great centers of population and employment, for good planning. Otherwise we would have to depend on off-the-shelf studies of the consultant or the chamber of commerce and extrapolate as needed or be grateful that the decennial census is now recent. After all, job opportunities can be capably projected because the occupation by industry mix changes only gradually in the long haul. Census data are available often enough to establish those two widely separated points that permit a linear extension into the one and five year future.

The wise institutional researcher will insist on getting *job openings* by occupation for his local employment market instead of mere volume of employment that masks patterns of demand and opportunity. New positions are not enough.

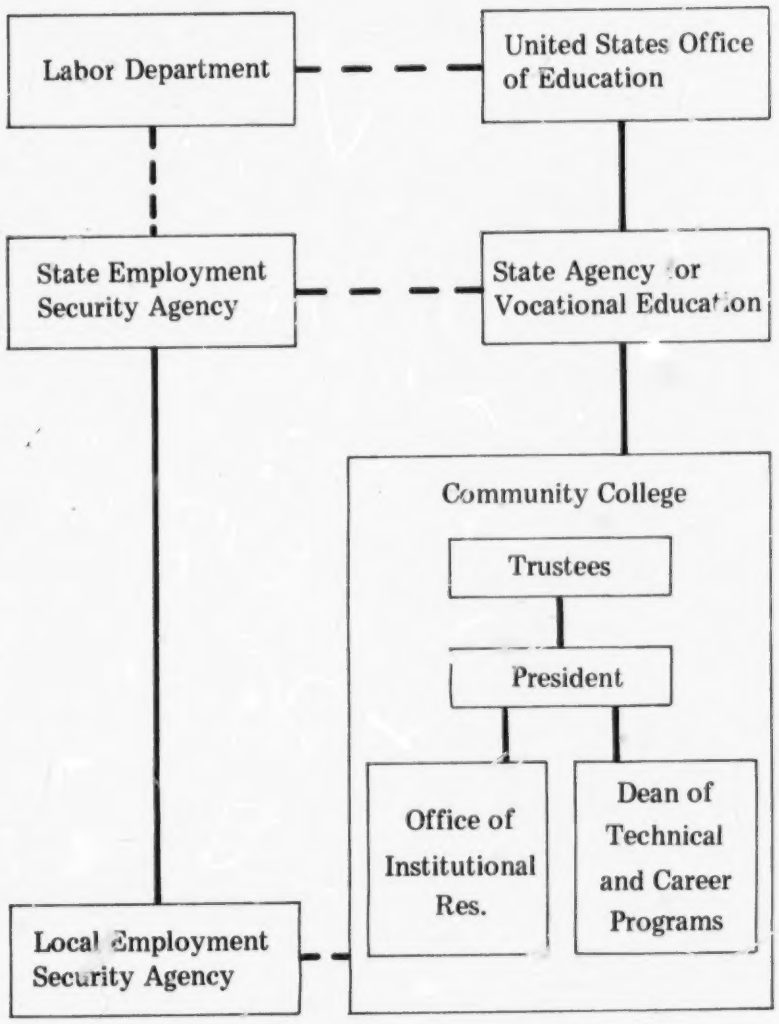

Figure 1. Information Flow and Linkage for Planning Career Programs

New positions plus turnover (replacement demand due to such causes as death and retirement) constitute job openings on the demand side. And while do-it-yourself methods are available in Labor Department publications, such as

TABLE 1
Selected Annual Job Openings in a Sample County, an Adjacent City, and a Set of Adjacent Counties

Occupation	Current Job Openings 1971	Projected Job Openings 1976	Percent Change 1971-1976
Technicians, Medical & Dental	266	429	61%
Secretaries, Stenographers, Typists	3,629	4,242	17
Salesman	2,992	3,216	7
Carpenters	208	204	-2
Motor Vehicle Mechanics	217	325	+50
Sewers & Stitchers	204	114	-44
Nurse, Practical	309	367	19

TABLE 2
Comparison of Potential Annual Job Openings with Sources of Training in a Local Area

Occupation	1971 Annual Job Openings	1971 Completions		Estimated Percent All Completions of 1971 Job Openings
		Public	Other	
Technicians, Medical and Dental	266	25	16	15%
Secretaries, Stenographers and Typists	3,629	800	249	29
Sales Workers	2,992	220	N.A.	10
Carpenters	208	54	170	108
Motor Vehicle Mechanics	217	90	N.A.	41
Sewers and Stitchers	204	113	50	80
Nurses, Practical	309	92	89	58

Tomorrow's Manpower Needs, and in guidelines forthcoming from the U.S. Office of Education, it is obviously more convenient for the responsible agency to do its own job. It may take local requests before the job starts getting done.

Table 1 shows selected job openings for a sample near-the-city type county's job market in 1971 and 1976. Technical, secretarial, and nursing occupations are examples of jobs that might claim the attention of the institutional researcher. These in turn may become the basis for policy and priorities established by the board of trustees or by top administration. Nursing and technician programs may be selected for development, for example, the one because of its urgency for the health and well-being of the community and the other because of its favorable rate of projected gain at 61 percent, from 266 job openings in 1971 to 429 in 1976.

Table 2 shows how a worksheet can be organized to relate information on manpower supply to current occupational demand. Manpower supply data that are locally relevant are typically a weak link in the supply and demand equation. This may mean that the institutional research worker will have to survey by telephone at least a sample of local employers, usually stratified to include the major volume employers or personnel offices, to find out what training they are doing.

Table 3 shows how decision rules can be incorporated into a summary sheet for consideration by policy-makers or top level administration. Community college program completions are related to observed current job openings in 1971. Student contact hours could have been used. In this case, different patterns of completion rates are expressed as targets for 1976. The reasons are varied for targets settled upon.

In the sample material of Table 3, nursing and technician programs are targeted for expansion. The one is selected because of certification requirements of public interest. The other is chosen because of the lack of competition in the private domain. All relationships are quantified rather than being "seat-of-the-pants" estimates which depend on the vagaries of subjective experience and judgment. Good reasons are also given, and in quantitative terms, for holding fast on the present level of secretarial and sales program efforts, understood as outputs.

These considerations lead to a well-reasoned series of planning steps available to the institutional research office in the service of career program policy-makers and operating level decision-makers. They are listed very briefly as follows:

1. Identify high volume and rapid growth occupations suggesting community college education for getting a job or for getting promoted (indicator—number of new job openings projected locally in that occupation).
2. Identify principal sources of supply in the public and private sector. Survey or sample these sources to establish the community college's local supply impact in each occupation of interest (indicator—projected program completions from all sources).
3. Make use of an alternative indicator (a weighted index of student contact hours) which can be checked to see if it is more sensitive for community college planning. This would be related to data from employers reporting quantity of related course work taken by current employees and new hires at different points in time. An annual sample of local employers is a one-month project which could yield invaluable results along these lines.
4. Define the program impact objectives of the community college's career offerings as targets for the five year future (indicator—program completions or student contact hours).

For many reasons the community college should be getting involved in local manpower supply and demand efforts. After years of economic expansion and a pick-your-career atmosphere, it has recently been hard for many to find

TABLE 3
Establishing Objectives for Community College Vocational Education Programs

Occupation	Actual Job Openings and Completions for 1971: Job Openings	Actual Job Openings and Completions for 1971: Comm. Coll. Completions	Projected Job Opening and Completions for 1976: Estimated Job Openings	Projected Job Opening and Completions for 1976: Target Completions	Rationale For Target Projection
Technicians, Medical and Dental	266	25	429	80	Increase percent completions 9% to 20% of job openings (very little private training)
Secretaries, Stenographers and Typists	3,629	80	4,242	80	Maintain same level of completions (other training increasing)
Sales Workers	2,992	22	3,216	22	Maintain same level of completions (training not essential for job)
Nurses, Practical	309	92	367	180	Increase proportion of completions to job openings from 30% to 50% (training is essential for employment)

a job. It is especially appropriate for the community college as a *local* college to help meet this kind of need—training for the right jobs. But identifying the right jobs can involve a considerable service to employers as well as to job-seekers. The community college is thus unique in higher education—it can be really sensitive to the demand side of the manpower equation. This is a uniqueness that should be showing up in alternative futures identified by institutional research and in the consequent priorities assigned to various community college career programs.

ACADEMIC AND MANPOWER PLANNING IN SOCIAL WORK—SOCIAL WELFARE EDUCATION: THE FLORIDA EXPERIENCE

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This paper reports a systemwide approach to academic planning in social work-social welfare education, with a new and emerging role for the institutional researcher. The institutional researcher, having transcended his traditional function as a data gatherer and data analyst, is seen as a participant in academic planning throughout the State University System. He is shown as a team member, working cooperatively with curriculum and manpower specialists in linking professional manpower needs with the degree programs of study designed to serve those needs.

HIGHER EDUCATION IN FLORIDA

Florida has seven public universities, five of which offer four years of undergraduate study, as well as graduate study, and two of which are upper division; that is, provide study at the junior and senior years, together with graduate study in some areas. Two additional upper division institutions will open in the fall of 1972. The nine public institutions comprise the State University System, which is governed by a single board, the Florida Board of Regents. Although the Board of Regents is a governing agency, it safeguards the autonomy and uniqueness of each institution by delegating authority to the university presidents in matters of institutional administration and control. In establishing systemwide policy, however, the Board exercises its authority of governance. To the extent to which the Board elicits the participation of the individual universities in policy formation and implementation, it is a coordinating agency.

In addition to its nine public institutions, Florida has twenty-eight community colleges. When plans were made for expanding public higher education in the early 1950's, an attempt was made to allow for the growth of both the public universities and the two-year community colleges. To this end, the concept of the upper division institution was advocated; this institution, *sans* a lower division, was intended to absorb the output of the two-year colleges, but not to compete with the community colleges at the freshmen and sophomore years.[1]

The integrated educational functions of the public universities and the community colleges are supported and strengthened by a pact between these two sectors of public education that prescribes that the graduates of the two-year public institutions who pursued a college preparatory program successfully (that is, who graduated with a "C" average) will be eligible for admission to upper level study in any state university.[2] The pact also specifies that "lower division programs in all state institutions enrolling freshmen and sophomores may offer introductory courses to permit students to explore principal professional specializations that can be taken at the baccalaureate level."[3]

Twenty-two private baccalaureate degree-granting institutions and four private two-year colleges complete the array of colleges and universities comprising higher education in Florida. As the decade of the 1960's ended, the enrollments of the public institutions accounted for approximately 32 per cent of total college enrollment; the community colleges, 47 per cent; the private four-year colleges, 20 per cent; and the private two-year colleges, a little more than one per cent.[4]

WHY SOCIAL WORK-SOCIAL WELFARE?

The choice of social work-social welfare education as an area for study and possible restructure was not a random one. In Florida today, programs in social work-social welfare education and in closely related areas are offered throughout the State University System and in several private colleges and universities. Also in the twenty-eight public community colleges, two-year programs leading to openings in social work, rehabilitative services, law enforcement, and in similar occupations, are offered. The existence of a wide variety of independently developed programs of study in social work-social welfare education called for comprehensive statewide coordinated planning to enable the institutions, through their graduates, to fill diversified manpower needs, and at the same time, to avoid if at all possible contributing to a surplus of trained manpower.

The existing degree programs in colleges and universities in Florida are of high quality. Unless coordinated planning on a statewide basis is strengthened, the proliferation of programs will certainly lead to diminished quality. An equally unwelcomed development could be that many of the persons produced by these excessive programs would be unable to find openings in the professions for which they are trained.

Academic programming based mainly on a continuation of existing programs of study, and agency planning that largely projects its future manpower needs from past patterns of personnel utilization, combine to stifle innovation. According to Matarazzo, who recently reviewed developments in the utilization of non-traditional mental health manpower, social service, along with psychiatry, psychology and nursing, continues to talk, but not act, in recruiting types of personnel to meet new demands for services. In contrast, "other segments of society have recruited, trained, and already put to work thousands upon thousands of non-professional persons whose main qualification in most instances is a desire to help their fellowman"[5]

The field of social work-social welfare education provides a classic illustration of the difficulty that ensues in higher education when degree programs are established and expanded without reference to projected manpower needs. Almost all other general professional areas—including teacher

education, engineering, political science and government, language, mathematics, the natural sciences, and the behavioral sciences—require coordinated academic planning at the statewide level.

ORIGIN OF THE PROJECT

In late 1969, exploratory discussions were held among representatives of the State University System (including the institutional research officer), the Division of Community Colleges, and the Division of Family Services, Department of Health and Rehabilitative Sciences, State of Florida, concerning the need for a statewide plan for the training and utilization of social work-social welfare graduates. Following the discussions, a research proposal was submitted to the Department of Health and Rehabilitative Service through the Division of Family Services and was to be supplemented by supporting state funds.[6] The project was funded for two years, beginning July 1, 1970, with combined federal and state monies.

A project staff, consisting of a director, a manpower specialist, a curriculum specialist, a research associate, and supporting secretarial and clerical personnel, was assembled. The project director was given the overall responsibility for carrying the project forward, including the supervision of his immediate staff.

A RESEARCH-ORIENTED APPROACH TO ACADEMIC AND MANPOWER PLANNING

Planning for new academic programs is rarely guided by institutional research. This generalization applied not only to social work-social welfare education, but to most areas of professional training. In social work-social welfare education, as in other fields of study, approval of programs usually depends upon the availability of faculty, the pressures of forces within an institution (deans, department heads, individual faculty members), the demands of forces outside the institution (professional organizations, alumni groups, interested individuals), and inadequate or distorted views of the job market held by educators generally.

Similarly, heads of agencies that employ social-work-social welfare graduates often make decisions on the basis of inadequate research data. For example, an agency head may be pressed to submit a budget listing his personnel needs using only previously established job descriptions fitted to ongoing programs of service. In contrast to such an approach, agency directors should base their needs on an analysis of existing and projected programs, thereby obtaining personnel to fit the new types of jobs created by the ever-changing demands of society.

Turning to higher education, there is no question but that a gap exists between the academic planning in the community colleges and the four-year institutions, state and private. This gap is created in part by differing constituencies; the two-year community colleges are responsive to local and area needs within the state, and in contrast, the universities, public as well as private, serve the wider community and are thereby more responsive to state, regional and national needs than the community college. Efforts have been made to bridge this gap, especially between the community colleges and the state universities, by adoption of the articulation agreement, to which reference has been made.

PROJECT OBJECTIVES

The objectives for this planning project were as follows: (a) to develop a method and organizational structure for comprehensive planning, development, organization, coordination, and evaluation of social work-social welfare education programs at all academic levels within the various institutions of the State University System, the Division of Community Colleges, and the private institutions of higher education in the State of Florida; (b) to delineate educational plans and goals in community colleges, four-year colleges and universities, and graduate social work programs that will provide for the differential use of staff with varying levels of education and that will be more responsive to the needs of personnel implementing human services programs; (c) to develop a system for updating current manpower needs for social work, social welfare, and community service personnel for the State of Florida; (d) to identify and inventory the skills required in the performance of human service roles at all levels of training as they relate to public and voluntary agencies; (e) to postulate the basic components of the curriculum for all institutions offering associate and baccalaureate degrees in this field (f) to evaluate the current ways in which the professional worker with two years of college training is being incorporated into ongoing human services programs; and (g) to identify faculty competencies required to conduct social work-social welfare education.

IMPLEMENTING THE OBJECTIVES

To implement these objectives, two statewide advisory committees were appointed by the project director, in consultation with the persons who proposed the project. One committee, comprised largely of educators, was given the task of identifying problems and issues in lower division, upper division, and graduate level study in social work-social welfare education. Further, this committee was asked to insure continuity, relevance and articulation in curricula design, and to avoid a duplication of course requirements in placing programs of social work-social welfare education in a continuum ranging from the associate degree through graduate work.

The other committee, made up of agency representatives from both service programs and personnel departments, was assigned the mission of planning for differential staffing. Carrying out this assignment called for the advisory committee to define and propose types of manpower positions requiring varying levels of training and to equate the skills and competencies needed for each position with educational objectives of the programs of study intended to prepare persons to fill those positions. The two committees were scheduled to meet separately on some occasions and jointly

at other times. Meetings of the committees were intended to provide a continuing interaction that would produce an enlarged area of consensus based essentially on logical analysis that in turn would lead to models of manpower utilization. Planning models based solely on logical analysis, however, have limited value, so research and demonstration activities that would yield supporting research data to aid the advisory committee were planned and implemented.

RESEARCH AND DEMONSTRATION PROJECTS

The short term research demonstration project has the potential of providing relatively quick results that lead to meaningful alternatives in resolving closely defined questions or problems. The tempo of research can be quickened by the use of demonstration projects. The central objectives of the four projects were:

1. To identify and document the specific professional roles and functions of the social welfare worker with two years of college study, four years, and graduate level study. Subject workers were studied in an experimental field setting for a period of five months.
2. To develop a model that would utilize a workshop organized as a continuing education activity to expose experienced workers to the skills and competencies of workers with lesser and different education hired to fill positions developed through the differential utilization of staff. The workshop will be monitored to ascertain the development of leadership among the training staff, and the general acceptance of the concept of differential staffing by all persons participating in the workshop.
3. To create meaningful linkages between the campus and the agency by selecting second-year graduate students to assume a "joint appointment" with the university and the agency. At the agency, the subjects will serve as in-service training specialists, and on the campus, will instruct beginning students in the roles and functions of human service workers.
4. To survey 1970 graduates of community colleges, universities, and graduate schools to obtain responses concerning their degree programs of training and their post-college career expectations.

AN INTERIM EVALUATION

To this point in this paper, the origin of the social work-social welfare project has been outlined, the educational setting in Florida which gave rise to the need for the project has been set forth, and the roles played by the institutional research officer in the whole matter have been described. You have, therefore, some basis for judging whether or not the institutional researcher was using his time and resources properly and well. An interim report of the degree to which the project objectives have been attained would be difficult to assemble at this time and would probably be misleading in nature. A progress report, however, couched in broad terms can be given, and is as follows:

1. The establishing of the two major advisory committees, one of educators (providers) and the other of agency heads (users) has been widely accepted in Florida. In a sense, the acceptance of these advisory committees validates to a degree the soundness of the organizational structure of the project.
2. The project director, assisted by his specialist in manpower and his specialist in curriculum, seemingly constituted a balanced professional team. The work of these three key project personnel was supported by their access to consultants. As the project continued, the existing key staff served as the core of an enlarged staff containing faculty personnel and researchers to man the demonstration projects.
3. Liaison between the State University System (Division of Universities) and the Division of Community Colleges has been vastly strengthened. Efforts to extend this liaison to the private colleges and universities were subsequently intensified.
4. To date, the development of the project supported the notion that systemwide planning should be centered in agencies that coordinate the institutions in contrast to being located in a single institution that has a stake in providing specific programs of study.
5. The institutional research officer functioned appropriately and properly in taking part in academic planning on a systemwide basis. The utilization of specialized competencies such as his knowledge of survey research, questionnaire design, and data analysis, supported the effective development of systemwide academic planning. Also, by relating his survey skills and experiences to an ongoing study of crucial importance, the institutional research officer had an opportunity to assess realistically his day-to-day operations.

A more precise statement concerning the attainment of project objectives must await completion of the project. Initially, our judgment was that the project was soundly conceived, and that in design and in implementation promised to be productive.

PROBLEMS ENCOUNTERED

Other than the usual administrative problems that drop up in carrying out research projects, the principal problem lay in the area of communication. The communication problem has several facets: scheduling committee members at times to avoid conflicting engagements; creating within a reasonable time span an atmosphere conducive to a meaningful dialogue among persons with varying professional backgrounds (i.e., agency personnel and educators); and once a meaningful dialogue was established, ascertaining that such a productive discussion would continue beyond the tenure of the project.

When the two committees met separately, a lack of consensus within each on basic issues was observed, suggesting that the two committees needed to meet separately for a

longer period of time than was initially set. Within the agency personnel committee, some difficulty was encountered in identifying the varying levels of social work positions that comprise differential staffing. Within the committee made up of educators, some degree of polarization occurred between university personnel and community college personnel, concerning the structure of the two-year associate of arts degree.

Once the two groups began holding joint meetings, members of the project staff and of the management committee noted that the members of the agency committee needed additional briefing on the educational aspects of manpower training, and the members of the curriculum committee required further briefing on the employment aspects of manpower utilization. Here again, the emergence of the need for one group to become more sensitive to the specific problems of the other group represented progress toward the objective of equating educational programs with differential staffing based on innovative approaches to manpower utilization. To report that communication between the two groups developed easily and progressed rapidly toward a productive exchange would not be correct. An intensification of time to be spent by the project staff with sub-committees of the two groups appeared to be essential if the dimensions of the communication problem were to be resolved.

From the outset of the project, a series of publications (project reports, position papers, monographs, etc.) was planned to report findings, conclusions, and recommendations. To ensure that productive discussion among the individuals involved in the project would continue after the project ended, plans were made to update these publications periodically.

There were signs that some of the personnel within the colleges and universities that participated in the project looked upon cooperative statewide planning as akin to a "big brother" relationship. The genesis of this point of view may have been a fear on the part of an institution that it was losing its autonomy and uniqueness. This attitude that is being described is probably familiar to all persons who are or have been on the staff of a coordinating or governing agency. Such an attitude if unchecked, would hamper the unfolding of the project. To contain this adverse viewpoint, the strategy was adopted of searching for accurate findings, sound conclusions, and defensible recommendations concerning the systemwide planning for manpower training and utilization in social work-social welfare education.

Education and manpower planning in any professional area in the midst of a rapidly changing economy and job market against the backdrop of social change was not an easy task. The overall social and economic setting was not a specific problem to resolve, but nevertheless, was a factor that affected the progress of the project. To have conducted this project at this time was, of course, a difficult undertaking. Not to have conducted this project at this time, however, would have been to allow the problems of uncoordinated training in social work-social welfare education and in poor manpower utilization to intensify and harden.

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[1] *Initial Report of the Council for the Study of Higher Education in Florida*, Board of Control, Tallahassee, 1955, and J.E. Ivey, *Tentative Plans for a State University at Boca Raton*, Board of Control, Tallahassee, 1959.

[2] *Articulation Agreement Between the State Universities and Public Junior Colleges of Florida*, Minutes of Florida Board of Regents, Tallahassee, April 5, 1971.

[3] *Ibid.*

[4] *Enrollment in Florida's Institutions of Higher Learning, Fall, 1969*, Florida Board of Regents, Tallahassee, 1970.

[5] J.D. Matarazzo, "Some National Developments in the Utilization of Non-traditional Mental Health Manpower," *American Psychologist* , vol. 26, 1971, pp. 363-373.

[6] *Development and Implementation of Comprehensive Planning and Coordination of Social Work-Social Welfare Education: A Research Proposal*, Florida Board of Regents, Tallahassee, 1970.

THE PLANNING AND EVALUATION OF A STUDENT-CENTERED FRESHMAN YEAR PROGRAM AT A "TYPICAL" LIBERAL ARTS COLLEGE

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In this paper I would like to describe the planning, implementation and evaluation of a curricular change at Hiram College, emphasizing the role which institutional research and planning played in facilitating the change.

In the fall of 1969, after two years of intensive discussion and planning, Hiram College launched an integrated new curriculum which emphasized interdisciplinary studies and increased student freedom and responsibility. All the traditional discipline-oriented graduation requirements were eliminated in favor of several types of new interdisciplinary programs and more student electives.

The Hiram program provides evidence that substantial innovations, more than just tinkering or gimmicks, can take place at typical (that is, moderately selective, nonexperimental) colleges which have fairly traditional faculties and student bodies. Furthermore, our experience indicates that such changes can win widespread student and faculty support, can have a generally positive impact on student achievement, attitudes, and satisfaction, and can be operated with little additional staff or cost. In fact, in the face of the enrollment and financial problems of most small private colleges, this year we have the largest freshman class in our history and a balanced budget.

Although Hiram's program is not a revolutionary change from the established American college pattern, there are large differences between our present academic program and that of several years ago. For example, over 20 percent of the courses are new, not only in title, but also generally in content and in methodology.

PLANNING THE CURRICULUM

I would like to list some of the factors which I think enabled us to make this change.

1. Hiram has a relatively young and flexible faculty and a history of innovation, e.g., the single course study plan of the 1930's—1950's.
2. There was general acknowledgement among faculty that the old distribution requirements were not accomplishing what had been hoped. This awareness was based in part on data about student attitudes and satisfaction with the program.
3. We had a new president who encouraged the faculty to make a major change without trying to determine its form. His only guidelines were that the change should be imaginative and educationally sound, but not cost more to operate than our former program. He also pressed hard for the group to come up with a proposal within a reasonable length of time, i.e., about a year. Thus, the resulting proposal had the support of the top administration, without the stigma of being imposed from the top.
4. I think it is significant that a small task force of twelve carefully selected faculty members formed the outline of the curriculum. This group represented a balance of disciplines, ages, and educational philosophies, but all members had in common receptivity to reasonable change and the respect of a sizeable segment of the whole faculty.
5. It took six months of long, weekly meetings before this group became cohesive and the members really began to communicate with each other. This small group was able to reach consensus on a bold but integrated general plan which could be financially managed by the college. I am convinced that the size of the group, the frequency and intensity of their meetings, and the reality-oriented guidelines provided by the president were important factors.
6. Following the general outline report from the small task force, most of the faculty and a number of students were included on a number of committees to put flesh on each component of the program. This had the effect of greatly broadening the base of support for the program and probably also of improving the quality of the final results.
7. At this point, before the proposal was voted upon by students, faculty and trustees, institutional research played a key role by developing a detailed model in response to questions about how the programs could be staffed and how they would affect departmental offerings. The model had the advantage of basing the allocation of staffing needs primarily on data rather than personal considerations, and thus it helped us avoid most of the divisiveness that often comes with major changes.

The model spelled out how many faculty load units would be needed to implement each aspect of the new program and then went on to show how the necessary staff could be obtained. Our general strategy was to staff the new programs by eliminating some sections of introductory departmental courses (e.g., Freshman English) which had previously been required. The model provided an estimate of the number of students who would, under the new curriculum, elect to take each of Hiram's introductory courses. This estimate was based upon stated student preferences for electives and departments' requirements for their majors. The final columns of the model compared the number of sections of each course offered in the previous year with the number required under the new curriculum. Since there was a net decrease in requirements with the new program, the model indicated that the new courses could be staffed and still leave each department with at least one section of its introductory course for majors and electors.

This staffing model was important not only in

answering faculty questions prior to the approval of the curriculum, but it has served as a clear, if tacit, agreement of faculty commitment to the new program. I believe that this planning has been an important factor in the success of the curriculum and in our ability to continue to staff it adequately. The model also gave us some indication of where we were inappropriately staffed and this provided management information which has been used during the past three years to shift the makeup of the faculty.

AN EVALUATIVE DESCRIPTION OF THE CURRICULUM

The Hiram freshman year is composed of four elective courses and six new curriculum courses. The latter are the three types; the Institute and Colloquia are small in group size while the Twentieth Century Course is common to the whole freshman class of 400 and, thus, relatively large.

Both student and faculty evaluations indicate that the ten-day *Freshman Institute* is a rigorous but exciting academic orientation to college and to the new program. The content focus of the Institute is on language and effective communication. The Institute seems to be successful in setting the tone for an increased all-college emphasis on responsible and articulate expression.

When regular classes begin in the fall, each freshman selects a *Freshman Colloquium* in which he will study a topic of common interest with a professor-adviser and eleven other freshmen. There is general agreement among students and faculty that Colloquia are interesting, valuable, and effective in meeting the established goals of improving communication skills and advising, of dealing seriously with substantial academic topics, and of exposing the student to humane, moral, and aesthetic concerns.

In the third component of the freshman program, the year-long *Twentieth Century and Its Roots* course, all freshmen examine the major issues of modern society from many perspectives. Student and faculty evaluations indicate that the course has been only moderately well received. As such it is apparently the least successful and most problematic part of the freshman program.

The freshmen also have taken four traditional departmental courses as electives, often in preparation for a particular major area of concentration. As expected they are quite satisfied with these courses.

The Institutional Research Office has provided prompt and continuous feedback to the dean and program directors about student and faculty attitudes toward the components of the curriculum. This information has enabled us to adjust the programs as we have gone along and to analyze why some aspects have been more successful than others.

It is perhaps somewhat surprising that the Hiram Freshman Institute has been such a successful part of the program, given the general difficulty colleges seem to have with orientation programs. I think the Institute is a good orientation in large part because it is only indirectly an orientation. That is, it is really a course to which both faculty and students come with expectations for hard and meaningful work. The fact that the goals of the Institute are clear, attainable, and short-range helps make the program rewarding. The success is probably not due so much to the specific planned lectures, films, discussions, etc. (which were rated rather ambivalently), but to the general feeling that the whole life of the college is focused for these ten days on the freshmen and getting them ready for college academically, socially, and personally. The usual orientation lectures and social events seldom seem to provide this feeling. No doubt the prospect of not having to take English composition if they are successful in the Institute is also an important motivator.

Before commenting on the Colloquium program and the Twentieth Century Course, it is important to emphasize that the intimate nature of the popular Colloquia is made financially possible by the large lecture format of the Twentieth Century Course. We hoped that the relevance of the topics and the rich mixture of visiting speakers, films, etc., would make up for the large size and relative passivity inherent in the Twentieth Century Course, but as stated before, there has been only moderate satisfaction with it.

In both the Colloquia and the Twentieth Century Course, freshmen have been given extensive freedom and responsibility for their own learning. Although there has been some faculty concern about academic rigor in the Colloquia, most students and faculty have adjusted well to the informality and the pass or no-credit grading system, perhaps due to the close contact and support of the professor-adviser. However, in the Twentieth Century Course, many freshmen have found themselves unable to cope with the responsibility of working without the threat of exams, required attendance, etc. In retrospect, it was probably a mistake to place freshmen so much on their own in a large course like this, but perhaps even the struggle and partial failure to seize the opportunity for learning on their own is an important lesson which will have positive long term effects on the students.

Because the Twentieth Century Course deals with the problems of our society, many students have felt that it should involve direct social action rather than listening, reading, analyzing and discussion. I think the course has been less successful than we hoped partially because of the gap between unrealistic expectations and the fact that this is, after all, still a course and cannot provide the solutions to the world's problems.

Partially on the basis of analyses like the preceding, we have planned a number of modications in the program for next year. For example, the Twentieth Century Course will be broken into class size sections, meeting as a whole group only once a week. The content of the course will be considerably changed and students will have the option of taking part of the course in their sophomore year. Student and faculty comments have led us to more closely integrate the Institute and first Colloquium, but to continue them realtively unchanged in spite of the fact that they are quite costly and resources are scarce.

THE GENERAL IMPACT OF THE CURRICULUM ON HIRAM STUDENTS

The Institutional Research Office has had major

responsibility for evaluating the impact of the new program on the attitudes, values, satisfaction, and achievement of students. The basic design of this study involves a comparison of student development during the last few years of the former traditional curriculum, with student development during the first years of the new program. Of course, this type of research is fraught with difficulties, but we felt the attempt was necessary and worthwhile, especially since thorough evaluations of curricular innovations have seldom been done. We are still in the process of collecting data for the second year of the program, but last year's results and preliminary estimates from this year are encouraging.

Although there seem to be increasing differences in the attitudes and values of students attracted to Hiram by the new curriculum, the first two new curriculum classes were very similar to the immediately preceeding ones in ability, demographic factors, expected satisfaction, and most attitudes. This similarity should help in making valid comparisons of the impact of the curriculum.

Student satisfaction with various aspects of the college has been measured with a short locally developed questionnaire. Table 1 summarizes the results of comparing the changes in the last freshman class to enter under the old curriculum (1968-69) from expected satisfaction in September to actual satisfaction in May with those in the first class to enter under the new curriculum (1969-70).

Both groups of freshmen made high and very similar expected satisfaction ratings in September at the beginning of the school year. In both years new freshmen expected to be most satisfied with the faculty and least satisfied with the town and the social life.

In 1968-69 there was a large drop from the expected satisfaction in September to the actual satisfaction in May on all the rated aspects of the college except the graduation requirements, which had been changed during that year as part of the transition into the new curriculum.

Finally, and most importantly, Table 1 shows that there was significantly less disillusionment and more satisfaction with almost all aspects of the college last year than in the previous year. Tentative results from the student ratings this spring are very similar to last year and thus indicate a continued higher satisfaction for both this year's freshmen and last year's, who are now sophomores.

Table 2 presents the ten-item satisfaction scale scores from the College Student Questionnaire, Part II (CSQ II) developed by the Educational Testing Service.

In May, 1969 Hiram freshmen were about average (compared to the national sample) in their satisfaction with the faculty, somewhat above average in their satisfaction with the administration, and definitely below average in their ratings of other Hiram students. A year later there was significantly increased satisfaction in all three areas. In fact, Hiram freshmen satisfaction with the faculty and administration was higher than at more than 90 percent of the colleges in the national norm group.

While I personally feel that the higher satisfaction

TABLE 1
Average Freshman Satisfaction, 1968-69 vs. 1969-70
(6.0 is very satisfied and 1.0 is very dissatisfied)

	Old Curriculum 1968-69		New Curriculum 1969-70		
Satisfaction with	Expected in Sept.	Actual in May	Expected in Sept.	Actual in May	Net difference—69-70 change minus 68-69 change
The faculty	5.21	4.32	5.36	5.03	+.56*
The administration	5.04	4.21	5.04	4.71	+.50*
The students	4.91	4.12	4.83	4.36	+.32*
Your adviser	5.12	4.24	5.07	4.64	+.45*
Your freshman courses	4.77	3.92	4.95	4.40	+.30*
Graduation requirements	4.39	4.29	4.88	4.77	-.01
The town of Hiram	4.11	3.50	4.08	3.77	+.30*
The social life	4.20	3.57	4.17	3.73	+.19
Physical facilities	5.04	4.39	5.09	4.63	+.19

*Significant at the .01 level

TABLE 2
College Student Questionnaire
Satisfaction Scale Scores
(Institutional norms in standard score units)

Satisfaction with	Hiram Frosh May '69	Hiram Frosh May '70	Difference—1970 minus 1969
Faculty	48.6	66.8	+18.2*
Administration	57.4	70.1	+12.7*
Students	39.2	53.8	+14.6*

*Significant at the .01 level

ratings last year were in large part due to the new curriculum, it must be recognized that other factors might have been important. For example, there is the "Hawthorne Effect" and the fact that the springs of both years were full of turmoil at Hiram as well as at campuses in general. On the other hand, supporting the contention that the higher satisfaction (and lower disillusionment) scores were the result of the curriculum is their concentration in the areas which should have bee: affected by the curriculum, e.g., faculty, freshmen courses, graduation requirements, and adviser. The replication of these findings this spring also adds support to the importance of the curriculum as a central factor.

Since students under the new Hiram curriculum do not take the traditional freshman English courses, it seemed important to measure their ability to use clear, effective English at the end of the freshman year. Table 3 shows that the new curriculum freshmen were more likely to show improvement on the CEEB English Achievement Tests over their high school senior scores, than was the old curriculum group which had the presumed advantage of two terms of college English. The results are discouraging in that few students showed marked improvement, with the majority of old curriculum students achieving lower scores. Tnis is probably due partially to lower test taking motivation in college and partially to the failure of traditional college English programs to deal significantly with grammar, word usage, etc.

We have given general college achievement tests on entrance and at the end of the sophomore year which do

TABLE 3
Percentage of Freshman Scoring Higher and Lower Than They Had as High School Seniors on the College Board English Achievement Test

	% Improving	% Declining	Total
Old curriculum (1968-69)	34%	66%	100%
New curriculum (1969-70)	63%	37%	100%

$x^2 = 13.49, \quad p < .01$

show marked improvement in achievement during the first two years of college, but we do not yet have results for the new curriculum students.

Finally, scores on the attitude scales of the College Student Questionnaire indicate that in certain respects the new curriculum students changed significantly more during their freshman year than did students under the old curriculum. The data indicate that freshmen last year became significantly more liberal and socially concerned and possibly more culturally sophisticated than did students the previous year. However, the aftermath of the Kent State tragedy probably seriously influenced these results, so that we will have to wait until this year's results are in before we can say with confidence what kind of attitude changes are taking place under the new curriculum.

In conclusion, we feel that we have an effective and workable curriculum which, through its increased flexibility and interdisciplinary emphasis on general education, meets the needs of contemporary students. However, we have found that it takes a tremendous amount of planning and energy not only to get a major change started, but also to sustain it. While there is always the possibility of slipping back toward the easier-to-do traditional ways, we are working hard toward more effective and comprehensive innovation. I feel, admittedly from a biased point of view, that the feedback provided by institutional research is central to this continued evolutionary improvement in the program.

RITUAL AND RESEARCH IN ACADEMIC POLICY FORMULATION, PLANNING, AND GOVERNANCE

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The realities of the governance process in American colleges and universities must be faced by all of us whether we be institutional researchers or academic administrators. My experience as an academic administrator is confined to a single liberal arts college. This experience may not be generalizable to larger institutions or, indeed, to other liberal arts colleges, but informal talks with colleagues at other colleges lead me to think that my experiences have not been atypical.

Recently I chanced upon a most interesting article in the *British Journal of Sociology* which offers some insights into our topic.[1] Although there is no reason to believe that these authors had American colleges in mind, their description of the governnance process in an unidentified large public service organization in Great Britain is an extremely apt description of the way we function in the American college. Their study was carried out to learn about the administrative functioning of organizations in which "professionals" make up a large portion of the personnel. They began by noting that a professional generally holds to a code of practice "which commits him to the independent exercise of his own trained judgment" and that he may "be committed to his code of professional practice more strongly than to the goals of the organization which employs him." They entertained the hypothesis that in an organization dominated by professionals "a bureaucratic hierarchy of authority would be very difficult to establish or maintain" and that "an authority structure much closer to what Weber described as 'collegiality' is probable."[2]

The results of the study by Noble and Pym provide some striking descriptions of what all of us encounter day to day in the American college or university. They noted first that "the claim inherent in professionalism to self-determination in the exercise of professional functions was extended beyond the areas of strictly professional competence into the sphere of general organizational planning and its detailed execution." They described this as "a form of authority structure in which ligitimate power is vested in a collectivity of equals"—a "collegial authority structure."[3] The organization they studied, not unlike our colleges, was formally organized into departments. The majority of the decisions in the life of the organization were made by a large number of hierarchically arranged committees with partially overlapping membership, a pattern of participation which was "sustained by a generally shared commitment to the value of self-government" and to the shared view that theirs was a community of "status equals."[4]

If the above description indicates why I was led to conclude that the description by Noble and Pym was an apt one for the American college, the following sentence should strike an even more familiar cord. "The most striking feature of the organization to the newcomer or outsider seeking some response from it is the *receding locus of power* . . . wherever or whatever level one applies to the organization, the 'real' decisions always seem to be taken somewhere else."[5] The authors illustrate this state of affairs with examples that can only make us wince as we think about their applicability to our colleges. Lower-level officials or committees insisted that they could only make recommendations. Departments had to seek the approval of higher-level committees which in turn insisted that they could only submit reports and recommendations to even higher-level committees where it was said the decisions were made. In the higher-level committees, on the other hand, although votes were taken and decisions formally reached, "there was a wide-spread feeling, not infrequently expressed even by some of its senior members, of powerlessness, a feeling that decisions were really taken elsewhere."[6]

The authors went on to describe another feature which is familiar to us on the college scene. They noted that in an organization of "status equals" the chief source of personal influence is through membership on an influential committee. Such membership not only permits the individual to participate in more far-reaching decisions but also provides him access to "system relevant information." They noted that in the organization under study decision-making appeared to be "a matter of who was able to produce an opportune statement at the right moment"[7] and that the person in such a position was likely to be one who held membership on *more than one key committee.* In the following description see whether you recognize some of the key "academic statesmen" on your own campuses. "The individual who achieved the position of link between committees need say little or nothing. The fact that he knew what another committee was doing would give weight to his presence and his presumed activity in other relevant decision making would dispose fellow committee members to give him resources (if only their confidence and/or confidences) so he would be able to operate on their behalf wherever else he did speak. The successful link man would seek to maintain this pluralistic ignorance, for every exercise of power is a potential revelation of its limitations." To get on one of the most important committees, it was necessary that his general qualifications "be allied with discretion, a prudent tactfulness that in effect amounted to the capacity to preserve the opacity of the decision-making process."[8]

The organization under study seemed to have made an interesting kind of accommodation to conflicting forces acting upon it. On the one hand was an accountability to external public figures for the successful carrying-out of services within the funds available. On the other hand, the carrying-out of its services was thought to depend on the collective autonomy and individual discretion of the professionals who made up the great majority of its staff. The

authors quote Max Weber to the effect that "collegiality unavoidably obstructs the promptness of decision, the consistency of policy, the clear responsibility of the individual. . ." The organization under study, probably not unlike the American college, adapted itself to the conflicting demands just described by concentrating effective power in the hands of a relatively small group of people in order to circumvent "most of the weaknesses of the collegial authority in a competitive environment."[9] But as Noble and Pym point out, "the powerful few could only act with authority while they maintain their equality of status with their professional colleagues." To do so they functioned within a committee structure which was "made necessary by the equal claim to participation and decision making by all the professional departmental managers"[10] *and* which made it very hard to establish just how influential any one individual might be. The committee structure provided the "influential few" with a ready means of diverting or avoiding criticism. At the same time, since it was important that all members of the community maintain the professional belief in "equality of status with their professional colleagues,"[11] the committee structure also served to protect the prestige of all the members of the collegial body, including those who were not in fact influencing decisions. "Impotence over any issue of range of issues was as veiled as effective power."[12]

In general, then, Nobel and Pym described an organization which seemed strikingly like the American college or university in which we all have to function. Collegiality is the dominant form of authority structure; committees play an important role and a "belief in the community of equals" is wide-spread. There is an interesting combination of "the ethic of professional autonomy" with the simultaneous presence in practice of a "hierarchy of influence." Powerful individuals exist, but it is not clear whether any individual is able to influence a particular decision. Just who makes decisions, and when they have been made, remains obscure.

Perhaps I have spent too much time on a subject which is all too familiar to you. If there is any justification in my doing so it is to make sure that we all understand what we are up against. Whether we are academic administrators interested in making use of institutional research in academic policy formulation, or whether we are institutional researchers eager that the results of our studies be put to work, we must deal with the reality which Noble and Pyn describe. This reality undoubtedly contributes to the frustration of both academic administrator and instituional researcher as they try to collaborate in the administration of colleges and universities.

It is obvious that institutional research results must get into the hands of decision-makers if they are to have any effect. It is not hard to see from the above discussion why this condition is all too frequently not met. Indeed, in the kind of diffused and hidden decision-making described by Nobel and Pym, it is not at all easy to determine the points in the system at which research results should be injected and it is altogether too likely that decisions will have been made at unpredictable times and places without relevant information. To the extent that this is the case in any given institution, institutional researchers might well consider conducting internal studies designed to clarify the actual decision-making processes at their institutions.

Knowing where in the decision-making apparatus to inject research results is not the only difficulty facing us, of course. We all have experienced situations in which we are confident that research results are being injected in the right place at the right time but in which their impact is negligible. In the usual processes of collegial governance, decision-making may be described as "ritualistic." Opposing points of view seem to be entertained in a ritual of open-mindedness. Arguments are recited and accepted in a kind of respectful ritual which pays little attention to empirical considerations. Basic differences are finally ignored in a ritual of agreement and consensus. The solutions arrived at often seem to be more designed to reduce momentary conflict than to lastingly solve basic problems and they often seem to embody implicit agreements to avoid certain difficult matters. On the whole, empirical considerations play little if any role except insofar as the unsystematic experience of participating individuals is brought to bear in argument.

Recently it has seemed to me that we have moved to a second stage of sophistication. Committee members are beginning to ask empirical questions and to request that studies be carried out, a development which can only be regarded as encouraging to institutional researchers. But, alas, the millennium has not yet arrived. More often than not the requested empirical information, when it does arrive, is set aside and the old familiar rituals take over as the means of arriving at solutions. We have added institutional research to our earlier ways of doing things but I fear that the requesting—then—ignoring of institutional research studies is becoming a new kind of ritual with which we will have to deal. Although I see signs that we are making progress, it is clear that the empirical and the pragmatic, as represented in the concept of institutional research, are still far from effectively counter-balancing the rationalistic and conventional which characterize the rituals of academic decision-making.

Max Wise has provided us with a glimpse of how academic administrators and institutional researchers may collaborate in working effectively within a collegial authority structure.[13] After describing the trend towards increasing participation by all segments of the college community in governance, he discusses a possible role of administrators within such systems which has something in common with the role that Nobel and Pym ascribe to the "link man" in a system of multiple committees. The link man, as you will recall, exercises considerable influence because he has a greater chance to be in the right place at the right time, because he knows about the work of other committees, and because he gains access to relevant information about the workings of the total institution. In effect, Wise is recommending that the academic administrator should function as a key link man in the collegial structure characterized by pervasive participatory democracy. The administrative link man would inject empirical information about the workings of the institution and its programs as these are needed for effective decision-making, i.e., he would function as a transmitter and interpreter of institutional research. As the

importance and value of this role become clear, the role of the institutional researcher should be enhanced and institutional research should have an increased impact on academic decision-making.

John Platt has discussed the role which experts ("intellectual elites") may effectively play in decision-making throughout society.[14] His words may be seen to apply to collegial governnance and the role of academic administrator cum-institutional researcher as contemplated by Wise. Characterizing our times, he says: "We do not want to be told or coerced or manipulated into doing some particular thing—even if it is supposed to be for our own good—so much as we want to know as accurately as possible what the consequences are of the different alternatives, so we can make the decision for ourselves. . . It is not 'advice' we want so much as an impartial mapping of costs and consequences."[15] In the same paper Platt asks why human groups to not "pursue larger utopias more often." He concludes it is because "we do not see how to get there, or we have a low estimate of success in an untried enterprise in an uncertain world, so that we fear we will lose our effort and be taken for fools." In this context he again points to the possible role of the man with the right empirical information or planning information: "Better maps of the costs and consequences can reduce this uncertainty and make the investment of effort and money in new directions more attractive. . ."[16]

Platt's discussion of maps leads to the last catch-word in the title of my talk: "planning." Institutional researchers are becoming increasingly involved with systematic processes of institutional planning. The concept of planning may provide an important link between institutional research on the one hand and academic policy formulation on the other. We have discussed above how the committee processes which dominate college governance seem to be as much concerned about reducing momentary conflict and achieving short-run solutions as they are concerned about finding solutions for the long haul. Planning, of course, has a built-in reference to the future. As such it holds out the promise, it seems to me, of intellectualizing conflict, of moving beyond the pettiness of the here and now, of depersonalizing issues and focusing on future actors in the drama of organizational life. Thus empirical considerations may gain entry into decision-making in the context of planning in ways that were not possible before the "future reference" of planning was introduced. Whether we are talking about the extrapolation of simple trends into the future or about elaborate inter-active models displaying alternative future consequences, institutional research and institutional researchers may become much more powerful forces in academic policy formulation through the vehicle of systematic planning.

Planning, however, must be effectively related to governance. The pattern of governance at most colleges and universities has not included in any very effective way the kind of subsystem or function we know as planning. In a system of committees with partially overlapping membership and with complex divisions of labor and decentralization of authority, planning gets done poorly if at all. The elaborate checks and balances inherent in the complex committee structure tend to preclude unified thinking about the future shape of the institution as a whole. And as we have noted, institutional research and empirical considerations generally have a tough go of it in the conventional governance structure.

Planning, for its part, is often discussed as if it were separable from governance. This is a serious mistake. Unless planning is conceived of as an integral part of the overall governance structure of an institution—particularly in a professional organization such as the college or university—planning will come to naught. Neff has recently made the same point in an excellent article on planning and governnance.[17]

The importance of integrating planning and governance is best exemplified for me in the negative example provided by a liberal arts college with whose efforts in planning I am somewhat familiar. This college decided to try an approach to planning which was modeled after that which has been tried in certain business organizations. Approximately ten chief administrative officers and a couple of key faculty members were appointed by the president to be the planning team. This planning team removed itself for an extended period of time from the campus and worked through an elaborate series of steps, starting with the broadest conceptions of the mission of the college and moving toward statements of specific objectives. The members of the team found this a most useful and stimulating experience. They came to grips with differences of opinion within their group to an extent they never had before. They experienced and dealt with interpersonal conflicts over the goals and objectives of the institution, and through betting to know and appreciate each other they arrived at a series of compromises with which they could all be comfortable.

Exhilarated by the process they had undergone and the fruits of their labor, the "planning team" returned triumphantly to the campus only to face an insuperable problem. It was thrust upon them that they were not regarded by the faculty and students of their institution as a legitimate group to be engaging in the institution-wide planning they had been doing. They did not constitute a legitimate, recognized committee. The matters they had been dealing with cut across a half-dozen or more standing committees of the faculty. The result was paralysis. Notebooks full of plans and planning information were carefully locked in desk drawers for fear that what had been done would become known. Conscientious individuals in the group were concerned that what had been "decided" by the planning team would somehow affect on-going decisions in what could later be seen as a kind of conspiracy for changing the institution.

From my point of view, what had happened in the above case history is clear. The planning process had not been integrated into the governance structure of that college. A separate top-down approach, as invigorating and stimulating as it must have been to the participants, simply was not making contact with the institutional processes that had been set up as legitimate ways of arriving at decisions. A few individuals had "planned" but the institution was not benefitting from the planning process. The planning team had made extensive use of institutional research but, because it was a part of an isolated planning process, it too remained isolated from on-going decision making. The moral again:

planning and institutional research must be integrated into the governance structure of an institution.

It is time to summarize. Colleges and universities are complex professional organizations. They tend towards a collegial authority structure and to embody an ideology which views the institution as a community of status equals. (It should be apparent that this is a very considerable over-simplification in a number of respects. There certainly are elements of the hierarchical bureaucracy in colleges, and even in the area of academic governance students are playing an increasingly important role in spite of the fact that they would not generally be regarded as "status equals.") The phrase "receding locus of power" is all too accurate a description of many of our institutions. Committees play a pervasive role. A relatively small group of individuals exert considerable influence through these committees but the overall structure effectively obscures the details of the decision-making process. The institutional researcher, eager to have his empirical findings brought to bear on decisions, has a difficult time determining where and when to introduce them. The focus of ordinary decision-making tends to be on current crises and the preferred method of attack involves a heavy dose of ritual and an antipathy to empirical findings. Progress is being made as institutional researchers learn how to work around these problems and as administrators become better educated in the potential value of institutional research. The development of programs of systematic planning—including academic planning—holds out promise to academic policy-maker and institutional researchers alike. The "future focus" of planning may help to overcome the rituals of conventional decision-making and provide fertile ground for the introduction of institutional research, although these beneficial effects of planning are conditional on the effective integration of planning into the governance structure.

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[1] T. Noble and B. Pym, "Collegial Authority and the Receding Locus of Power," *British Journal of Sociology*, vol. 21, pp. 431—435.

[2] *Ibid.*, p. 432.

[3] *Ibid.*, p. 433.

[4] *Ibid.*, p. 435.

[5] *Ibid.*, pp. 435—36.

[6] *Ibid.*, p. 436.

[7] *Ibid.*, p. 439.

[8] *Ibid.*

[9] *Ibid.*, p. 441.

[10] *Ibid.*

[11] *Ibid.*

[12] *Ibid.*, p. 442.

[13] Max Wise, "Reflections on New Configurations in Campus Governance," unpublished address to American Association for Higher Education, Chicago, March 2, 1970.

[14] J. Platt, "How Men Can Shape Their Future," *Communication*, Mental Health Reserach Institute, University of Michigan, Ann Arbor, 282, 1970.

[15] *Ibid.*, p. 14.

[16] *Ibid.*, p. 24.

[17] C. B. Neff, "Planning and Governance," *Journal of Higher Education*, vol. 42, 1971, pp. 116—132.

FACTORS AFFECTING FACULTY ATTITUDES TOWARD PARTICIPATION IN INSTITUTIONAL POLICY FORMULATION

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There exists little doubt that institutional policy formulation, be it academic or otherwise, is one of the most difficult tasks facing the administrator today. The need to remain relevant, to up-grade, and to evaluate on-going programs demands the greatest share of the administrator's time and patience. And in today's college, where the tendency to allow ever greater faculty participation in academic governance tips the scales heavily, it has become increasingly important to know and be able to judge the attitudes of faculty members. Hence, this paper shall deal with those factors which affect faculty attitudes toward policy formulation.

The term "faculty" tends to identify that which does not exist. That is, a homogeneous group of individuals bent upon instilling knowledge in the minds of the young. The term "faculty" will be used only because it is brief and expeditious; it will be used, however, to identify a heterogeneous group of individuals whose homogeneous function is to teach, guide, and direct. Heterogeneity begins with the individual, and in an effort to determine those factors which affect faculty attitudes, one must first know the individuals concerned.

The question arises, of course, concerning the extent to which the administrator can in fact know the individual. Most administrators would agree, to be sure, that the ability to know faculty results from experience with faculty and from good "hunches." Both elements are necessary ingredients in the making of a leader-administrator. Lacking the first element, the young administrator must edge along on uncertain ground. There are, however, other means for anticipating faculty attitudes. Some biographical characteristics of individual faculty members can point to potential attitudes; more about these characteristics will be discussed later.

Another question arises, of course, concerning attitudes. An attitude is basically a reaction to a particular situation or condition. Consequently, before an attitude can be "tested," a situation must be provided. Individual variables can then be factored out to determine which variables seem to have contributed to the development of the attitude exhibited. Control groups can be used to verify or deny the contribution of specific variables.

A recent study (1969) conducted by this writer produced several rather interesting results relative to factors affecting faculty attitudes. All data and scores were derived from personal interviews with 105 faculty members chosen at random from five public community colleges in southeastern Michigan. After having collected twenty biographical variables on each faculty member, an instrument called the Communication Acceptance Rating was administered to each. Essentially, the Communication Acceptance Rating provided the situation against which faculty attitudes were identified. Faculty members were asked to react to three kinds of communications (described below) and attitude was measured by the subject's expressed latency of response according to three response alternatives.

The Communication Acceptance Rating is composed of fifty potential communication topics determined by jury validation procedure from a list of 210 random topics. The faculty member was expected to respond to all fifty of the communication topics in a total of two and one-half minutes. The response to each topic was in the form of a check mark in one of three alternatives. In effect, the faculty member would respond to each topic (in the context of day-to-day affairs) immediately, later the same day, or later the same week. Unknown to the faculty member, however, the fifty topics were actually grouped into three interest categories; a fourth group of topics was included as a buffer group in an effort to more securely hide the intent of the instrument. The three interest groups were as follows:

1. Personal-Professional: that group of interest which would relate to the individual faculty member, e.g., professional standing, professional development, personal attributes, etc.
2. Instructional-Curricular: that group of interests which would relate to the individual's activity or function as a faculty member in an institution of higher education.
3. Extracurricular-Community: that group of interests which would relate to the periphery of the institution, e.g., fraternities, athletic contests, etc., and to the milieu or environment in which the institution functions, e.g., local population, city, etc.

As noted earlier, twenty biographical variables were collected concerning each faculty member interviewed. Since the sample was drawn from five public community colleges in southeastern Michigan, the conclusions should be viewed as pertaining only to similar settings.

Among those biographical characteristics exhibiting significance within this group were the following:

1. The average age of all female faculty members was found to be significantly higher than the average age of all male subjects. Almost four years separated the two groups.
2. The average annual teaching load of male subjects was found to be significantly higher than the average annual teaching load of female subjects. Approximately four semester hours separated the two groups.
3. The average number of years of prior high school teaching experience for male subjects was significantly higher than for female subjects. Two years separated the two groups.
4. Female subjects reported a significantly greater

number of years of prior commercial-industrial experience than did male subjects. Two and one-half years separated the two groups.

5. The number of credits earned beyond the last degree is reported by male subjects was significantly higher than that reported by female subjects. Eleven semester hours credit separated the two groups.

An overview of the scores derived from the Communication Acceptance Rating, and various statistical measures provided the following information:

1. In relation to the sex variable alone, the difference in mean scores was not significant at the .05 level.
2. In relation to the two groups and the three scores derived from the instrument, a correlation matrix produced no significant differences at the .05 level.
3. A t-test of the difference between means across the five institutions produced some startling results. For example, though the colleges visited were "community" colleges, the lowest score in all distributions was interest in communications related to extra-curricular-community topics. The five institutions generally exhibited wide and significant (.05 level) differences in relation to the scores derived.

Concerning the relationships between biographical variables and instrument scores, several points should be made. The biographical variables collected on each faculty member were of two types: nominal data and ordinal data. The Chi-square statistic was used to measure nominal data and instrument scores. The test of significance for nominal data produced no significant relationships. The Spearman Rank Order Coefficient of Correlation was used to measure the relationship between ordinal biographical data and instrument scores.

Of the original twenty biographical variables collected, two were deleted due to insufficient data, six were nominal in nature and exhibited no relationship, and five of an ordinal nature exhibited no relationship. Of the remaining seven ordinal variables, four exhibited consistent and significant relationships of .05 or less.

The four variables found consistently significant, either for the total group, or for the male or female groups alone, were: (2) Chronological Age; (2) Number of Years Residence; (3) Number of Publications; and (4) Number of Credits Earned Since Last Degree.

The relationships found significant between these four variables and the three communication groups were as follows:

1. Chronological Age
   a. There existed an inverse correlation between chronological age and personal-professional communications; the greater the age, the less interest exhibited by the total group in topics of a personal-professional nature.
2. Number of Years Residence
   a. There existed an inverse correlation between number of years residence and personal-professional communications for the female group; essentially, the longer the faculty member had resided at the institution, the less interest exhibited in topics of a personal-professional nature.
   b. There existed an inverse correlation between number of years residence and extracurricular-community communications for the female group. Essentially, the longer the faculty member had resided at the institution, the less interest exhibited in topics of an extracurricular-community nature.
3. Number of Publications
   a. There existed an inverse correlation between number of publications and both personal-professional and extra-curricular-community communications for the male group; essentially, the greater the number of publications, the less interest exhibited in both categories.
   b. There existed inverse correlation between the number of publications and instructional-curricular communications for the female group; essentially, the greater the number of publications, the less interest exhibited in topics of an instructional-curricular nature.
4. Number of Credits Earned Since Last Degree
   a. There existed an inverse correlation between number of credits earned an instructional-curricular communications for the male group; essentially, the greater the number of credits earned, the less interest exhibited in topics of an instructionsl-curricular nature.

In summary, four variables or factors tended to affect interest in various tasks. It would seem apparent, then, that such factors would also affect faculty attitudes toward tasks of varying types. If one could somehow delineate between institutional policies relating to the personal and professional condition of the faculty, the instructional function of the faculty, and those policies of the institution related to extracurricular or community activities, one could generalize in the following manner:

1. That in relation to those institutional policies dealing with the personal and professional condition of the faculty, e.g., policies on rank, sabbatical leaves, publications, etc., older faculty members would tend to exhibit little interest;
2. That in relation to those institutional policies dealing with instruction and instructional function, e.g., methodology, grading, class absences, etc., male faculty who have earned a substantial number of credits toward the next degree, and female faculty who have a number of publications to their credit, would exhibit little interest;
3. That in relation to institutional policies dealing with extracurricular and community activities e.g., adult evening sessions, community benefits, athletic contests, etc., male faculty who have a substantial number of publications, and female faculty who have resided at the institution for a number of years, would exhibit little interest.

Though generalization should not be the hallmark of good administration, the foregoing summary points up several questions. For example, does the administrator tend

to rely upon the older and possibly tenured faculty member to exhibit leadership relative to decisions affecting the personal or professional condition of the total faculty? If so, a word of caution should be inserted. And doesn't the administrator tend to promote the acquisition of further degree course work among younger faculty? If so, he does so perhaps at the expense of that faculty member's interest in the task for which he was originally employed, i.e., that of teaching. And doesn't the administrator, particularly the new administrator, tend to rely upon faculty who have "been around awhile" to provide leadership concerning community affairs? If so, he may be fooling himself. And isn't it so, that publication is promoted by some administrators? If so, this must be done at the expense of teaching activity on the part of the female faculty member; and the male faculty member will tend to exhibit little or no leadership in professional and community affairs.

In large part, then, it would seem that the general composition of the faculty group would provide some indication of faculty attitude toward policy formulation. It would also seem pertinent that the philosophy of the institution can in large part be determined by the composition of the faculty group. For instance, if the philosophy of the institution were such that the teaching function were emphasized, faculty members who had already attained their last personally desired degree, would perhaps be the most willing to participate in policy formulation relative to instruction and teaching. In the end, then, it would seem that it is the administrator himself, in the process of hiring and releasing faculty, in building and structuring the faculty, who actually structures and gives direction to the potential for faculty participation in institutional policy formulation.

POLICY FORMULATION—IN MOTION

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My topic is institutional research and academic policy formuation—an introduction. I use the word *introduction* advisedly, because the two are not necessarily well acquainted at the present.

I think I should warn you at the outset that this is not a research paper. There won't be a chi-square or a standard deviation in my entire presentation. (Though I can't guarantee that some won't think it is *deviant.*) No offense is intended—rather just the opposite. Research, after all, is aimed at bringing some form to feelings and experiences so that intelligent conclusions can be drawn and examined. Probably more research has proceeded from feelings, hunches and observations than from slide rules and calculators. At least I'd like you to allow me to assume that for a few moments today.

My remarks are based on observations, feelings and opinions about the formation of academic policy in community colleges. At this point I regret that I chose the word *policy*. It is at once too confining and too hard to define. The textbooks, of course, define *policy* as something the board of trustees must establish. But in the real world (or as close as the campus comes to being the real world), if someone asks, "What's the policy on this?" he really is trying to solve an immediate problem like "Where do I park my car?" or "How come I can't change texts every quarter?" For now, let me define academic policy in terms of a question: Who teaches what to whom in what circumstances? I'll return to *academic policy* later, but let me talk about *institutional* research for a minute or two.

Most of you are undoubtedly aware that *institutional research* can be an uncomfortable thing to have on campus. The institutional researcher is sometimes like the little boy who points out that the emperor indeed has no clothes on. We all have a very human tendency to assume that what we are doing is intrinsically worthwhile. The institutional researcher may apply extrinsic standards that threaten our comfortable routines. The institutional researcher may point out that the political science department is using six professors to teach 33 classes to 37 students. This kind of news tends to make political science departments uncomfortable.

Francis E. Rourke and Glenn E. Brooks have pointed out in their book *The Managerial Revolution in Higher Education*, that institutional research and modern information-processing systems can alter power relationships on the campus. In particular, they note that centralized information systems may reduce the autonomy of department chairmen.[1] This does not exactly endear institutional research to the academician because that makes department chairmen at the very least, uncomfortable.

Of course, there's one way around this problem. It is to designate a director of institutional research, give him an office (preferably some distance from the administration building) and let him shuffle papers. If you ask him a question, he can answer knowingly in correlation coefficients, and you have a status symbol. When important visitors come to call, you can say that you have an office of institutional research.

Before I get back to the subject I promised I would talk about, academic policy formation, let me mention some of the problems I see in institutional research as commonly conducted.

First, institutional research tends to focus on what can be counted, on what is quantifiable. Rourke and Brooks found that institutional research is frequently directed toward finance and space and facilities utilization. Such matters are easily quantifiable.[2]

And second, institutional researchers don't run head on into the faculty bias that learning is sacred and immeasurable. Dr. Arthur Cohen, Director of the Educational Research Information Center's Junior College Clearinghouse, has complained that little of the current research about community colleges addresses itself to *learning*.[3] Of course, investigators have found precious little to agree on. Wilbert McKeachie, Jr. has written that the only generalization that all the research about college teaching supports across the board is that "knowledge of results facilitates learning."[4] It is, admittedly, a tough job to examine what institutional arrangements best facilitate learning—but isn't that the name of the game?

The third problem I would mention is the too-frequent assumption of research design—that faculty and students are interchangeable parts who vary only with respect to the variables we're examining. You and I know that they're not interchangeable parts—in fact, some of them are more like humpmobile parts.

And a fourth problem with formal research is that if it's well-conceived and follows all the rules, it's usually too late to have an impact. And as we examine academic policy formation, you may see that this is an important problem.

Rourke and Brooks suggest that academic policy is increasingly being based upon "hard" or verifiable data.[5] But what I want to contend here is that academic policy, these days, is in fact formed at the negotiations table. Let's look at some of the constraints and influences upon academic policy.

First, an influence that is not too often explicity recognized is inflation and decreasing income per student experienced in both the public and private sectors of higher education. Inevitably, this *reduces alternatives* for policy formation.

Second, in public higher education, the legislature and other state agencies are able to prescribe, through appropriations and statutory and policy limitations, the extent to which institutions are able to chart their own course and comprehensiveness of curriculum. I think it was Will Rogers who said that "When the legislature is in session, no man's

life and property are safe."

Third, the college's own faculty imposes limitations in at least two ways. One is the set of intellectual blinders they bring with them from graduate school. The other is their mounting demand for participation in the decision-making process of each institution, therefore, more reduced alternatives. Richardson has developed this idea in the March, 1967, *Junior College Journal.*

Fourth, we could have safely omitted students from this list until a few years ago. Now they are demanding—and getting—a seat at the bargaining table. For an analysis of this sort of demand, see Deegan, *et al.*,[6] in the November, 1970, *Junior College Journal* and William McHugh[7] in *The Journal of Higher Education* March, 1971. I might say, parenthetically, that adding students to the negotiation process creates about as many problems as the shape of the table did for the Paris peace talks. It may also reduce alternatives.

Perhaps I should set the task of academic policy formation in some sort of context. To begin with, higher education is a public matter and this holds true whether it receives public support from the legislature or from other sources outside the college that can't be construed to be public. It is also public in the sense that it contributes to the public well-being, educational level, and to the economy and political nature of the society. Higher education is at the same time also personal in that it is a marketplace for each individual's lists of musts and wants and should strive to provide for his personal goals and aspirations. An institution of higher education is also a community where the faculty and others perform the services for the customers who are the students. Historically, the faculty has considered itself essentially to be the institution. Another force then becomes the faculty.

Each institution, or perhaps class of institution, is guided by goals which are in essence long-range tensions—objectives which are specific means for attaining goals, and of course policies which are recorded objectives. Now the question should be asked, "Who establishes what?" Traditionally it may be said that goals are established by the body which creates the institution or are modified by similar contemporary bodies. Objectives may be said to be established by individual institutions through some sort of process or cooperative endeavor of the institutional communities; and policies, however formed, become guidelines for their attainment.

So goals, objectives, and policies become, at least in one line of reasoning, both public and private as well as expressions of a collegiate community. The quest for authority to participate in the establishment of all three may be thought of as personal in terms of the emergent demand for student participation. The argument goes something like this—since one's education is personal, a student must enjoy the right to determine not only which course he may take but to an increasing degree what courses should be taught by the faculty. We should remind ourselves that student participation is cyclical rather than lineal. It enjoys little progressive involvement and in a sense leaves the wheel to be re-invented with each year.

The public view surfaces from time to time, particularly in periods of stress, student unrest, tight money, etc.—and *its* argument goes as follows: if taxpayers or the public or the contributors are going to foot the bill then they have a right to the ultimate word in the determination of goals and objectives and in some cases policies and procedures.

Remember that the institutional community or the faculty has, for hundreds of years, reserved in their eyes the right to establish, if not goals, certainly objectives and policies for their institution. What we have here is a picture of growing complexity and at least the seeds for an understanding of why higher education is experiencing the degree of turmoil evident today.

Now I have not even mentioned the administration. For this you are probably thankful. It is, however, not difficult to imagine that an institution's administration might prefer to formulate policy to carry out goals mandated by a legislature or other levels of government or control because that's where the money comes from. It becomes a little more difficult when those goals vary from those of the faculty who already have an academic degree in what certainly should be taught. It's even tougher if the two sets above vary substantially with the personal goals perceived by students collectively and individually.

Now the most recent, and possibly most enlightened, way to cope with this variance is to develop policies cooperatively—which means negotiation. The best negotiated agreements are those which totally satisfy *none* of the negotiating parties but rather represent the best compromises attainable. Consequently, there is little room for the truth and beauty curriculum. So now that we have arrived at the academic policy negotiating table, who gets a seat?—the public (in several forms), the students, the faculty and the administration.

Is there a chair for the institutional researcher? I think so. I made the observation that the involvement of increasing representatives of vested interests may have the effect of reducing alternatives. Good, carefully prepared information, pertinent to the problems at hand can turn reduced alternatives into increased opportunities. Institutional research can do this job. I dare say that everybody wants to be a winner. So it follows that nobody at the table can win if the institution isn't achieving its goals.

Good information *can* accurately reflect the needs and wishes of the students. Good information can project the consequences of courses of action taken in response to the demands and requirements of the faculty, the public, and the statutes. Good information *can* provide an accurate assessment of the capabilities of the resources available to the institution. In short, *good information* can and ought to provide empirical data where much too often sponsor's logic has prevailed in the past.

But routinized collection of historcial data is not enough. To be effective where academic policy is being hammered out around our table, information (developed through institutional research) must be future oriented. Not only are we negotiating for future action, but the consequences of that action must be as clear as it is humanly possible to make it. And that demands good information—

and that negotiators read it.

So let's take the institutional researcher out of the back office so he can give us the data we need to expand our opportunities to arrive less at decisions which represent what each party can "hang onto" and will satisfy no one, and increasingly represent conclusions arrived at through collective wisdom. When we write that into academic policy it might represent some progress toward something better in policy as well as in negotiation.

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[1] Francis E. Rourke and Glenn E. Brooks, *The Managerial Revolution in Higher Education*, p. 117.

[2] *Ibid.*, p. 68.

[3] Arthur Cohen, remarks made to the faculty at Tacoma Community College on November 6, 1968.

[4] W. J. McKeachie, "Procedures and Techniques of Teaching," *The American College*, ed. by Nevitt Sanford (New York: John Wiley & Sons, 1962), p. 349.

[5] Rourke and Brooks, *loc. cit.*

[6] William L. Deegan *et al.*, "Student Participation in Governance," *The Junior College Journal*, vol. 41, no. 3, November, 1970, pp. 15—22.

[7] William McHugh, "Collective Bargaining and the College Student," *The Journal of Higher Education*, vol. 42, no. 3, March, 1971, pp. 175—185.

"KNOW YOUR TERRITORY"

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THE ISSUES

The community college is a multi-purpose local educational institution with open-door admission. Its goal is to provide post-secondary experiences in transfer, terminal vocational, technical, and continuing education (credit and non-credit) programs. To do this the community college must "know its territory", create public awareness of its potential service, and be accountable for relating issues and concepts to its diverse clientele. The challenge is not only to relate the learning experience directly to the extant career world, but to take the student "where he is" and lead him as far as he can go, within the assigned function of this type of institution.

The youthful product of such institutions complain of the irrelevancy of subject matter and the impersonality of instruction. If these objections are valid, and the community college desires to correct the faults, its thrust must be to educate people to become designers as well as consumers.

A compounding challenge is that a majority of the student population at community colleges is characterized by low past academic achievement and intellectual inability to handle immediately the demands of quality collegiate pursuits. A typical analysis of enrollment, as taken from 1969 Butler County Community College data, reveals the following high school graduation quintile ranking: 1st—7%, 2nd—17%, 3rd—28%, 4th—33%, 5th—15%. Of those enrolling in technical arts programs 79 percent were in the lower 3 quintiles! To achieve scientific and technological literacy while implanting affective concern, realistic applicable experiences of subject matter are essential for students at all levels.

Education at the community college is not one of just meeting the law of supply and demand of the economic area served, but primarily one of image producing for career choosing, and of organization for defining and coping with pertinent institutional related problems.

With the exception of a few locations the community college concept is in its infancy. Most comprehensive two-year institutions have just emerged from the incubation and generative periods. In my opinion they simply do not yet know fully what kinds of institutional research will be necessary or helpful to them, and furthermore do not seem to agree on what is essential. In Pennsylvania every attempt to have even a minimal common pattern for community college institutional research has been unsuccessful. The evolution of the community college has reached a critical point, however. Bases for decision making must be established. My premise is that each institution must now make significant efforts to "know *its* territory," for its realm and operation are not identical to other types of colleges and universities, nor even to other such comprehensive community instituions.

WHAT CAN THE COMMUNITY COLLEGE DO?

The first task of the community college is to understand the community as a dynamic process. The college must recognize the characteristics of the microcosm in which it exists. It must define the sub-system of which it is an integral facet. The community college should become the center for information about the community. Although the community college must be a teaching institution, it should be competent at research needed to answer questions concerning local educational services.

The requirements of the community college are thus to understand and be committed to community development with a willingness to adapt different approaches and relationships which may not be found at typical colleges and universities. Also the two-year institution must listen to the community's expression of needs, and indicate how and under what circumstances it can respond to those needs through the people it educates.

In the May 1971 *ERIC JC Research Review*, Adkins and Jennings discuss institutional building capabilities. Their directives: outline succinctly and feasibly a realistic direction for initiating decision-making in the fledgling community institutions. Four categories are delineated: compatible objectives; well conceived, detailed plans for development; judiciously selected procedures and resources; systematic body of manpower to develop and manage.

Despite the relevance of this logical outline the community colleges must also individually decide what they need to know in at least 9 areas of operation: community services; program requirements, calendar and enrollment dates; standards of accreditation; labor market needs; financial base of operation; instructional productivity; student personal follow-up; citizen and advisory participation in decision making; master planning; horizontal and vertical coordination and articulation with other institutions of higher education and business and industry.

Guiding the analyses in each of these categories should be the following premises: the word "community" should become more than just a part of the college's name; community colleges have no strong traditions to which they must adhere; there are no established bureaucratic patterns or a set molded organization to curtail flexibility and viability in community colleges.

The challenge then incorporates not only what cognitive, conceptual knowledge is essential, but also what effective emotional, social objectives and urban "survival" skills are legitimate learning experiences. Behavioral or performance objectives must be derived from model problems in the living target population in order to create a curriculum designed to meet the unique needs of the community college clientele.

CONSIDERATIONS IN "KNOWING THE TERRITORY"

1. Community Services

A definition of the parameters of community service is essential. While it is appropriate to determine if the community college should cooperate with community service programs, it must be determined if all academic divisions (occupational, liberal arts, continuing education, etc.) should have a direct responsibility to community endeavors. To what degree does and should the curriculum "work for" the community? Where are dichotomies if the goal of the community college in toto is to serve the community?

2. Program Content and Requirements

It is a mistake to opt typical "college" for all if this means neglecting other alternatives that in many instances might yield greater individual and social benefits. Curricular relevance must be marked by institutional performance. Each college must determine how to deal with the *personal* development of its clientele.

In Pennsylvania, no greater problem faces community colleges than that of providing appropriate learning experiences for *all* student clientele. Society's expectations, and the increasing demand for a more highly skilled labor force have combined to drive through the "open-door" of our institutions of higher learning literally thousands of students who a few years ago would never have attempted post-secondary education. Many of these students are only marginally prepared for successful work in college level programs. Despite some institutional efforts to provide remediation, many of these new students will disappear from our college campuses rapidly and in alarming numbers unless we accept the challenge of "reaching" these disadvantaged youths and adults.

Artificial traditional length-of-course requirements should be eliminated, and new time periods determined by criteria and evidence of how long it takes students to become qualified. Desirability of more cooperative work-study or on-the-job training time should be researched.

Concomitant with potential variable program patterns is consideration of flexible enrollment dates. Short and varied time units possibly can produce graduates on sequences more congruent with regional employer needs.

3. Accreditation

The goals and character of the community college differ from other institutions of higher education. Thus the traditional process oriented patterns and standards for evaluation are debatable. The local comprehensive two-year institution, in integral conjunction with the regional accrediting agencies, must analyze and decide how product orientation evaluation can be established as the valid guidelines for accreditation. Determinants of accreditation for community colleges must be established by what students from the various curricular programs can perform.

4. Economic and Labor Needs of Community

The local labor market needs must be studied since the majority of community college students (especially those in continuing education programs) presently are or do become employed in the service area. Curricular modifications must reflect the changing community labor and economic scene. However, this category of institutional research must concurrently incorporate extreme caution against geographic discrimination. Community colleges must determine what regional or state data and patterns can establish more freedom for human choice within the "work world".

5. Financial Bases

Community colleges appear to be caught in appropriation schemes and fiscal policies which are oriented to liberal arts colleges and university undergraduate operations, or to be bound to fixed dollar allocations. If the community college emphases are to be directed toward career programs, with open-door admissions, the real costs of these curricular endeavors in each locale should be determined and publicized in detail. Financing bases must somehow be enacted to recognize comprehensively the higher per student cost of occupational training and to support the individual learning experiences demanded in remediation.

6. Instructional Productivity

Research on pedgogy should be left to the university schools of education. The community colleges, however, must each determine for themselves how their learning experiences can be organized for the most effective productivity (e.g., will open-ended courses and student recycling in courses be beneficial?). The measures of effectiveness to be decided are in the realm of quality and quantity of knowledge and skills each person assimilates, and the net value to the community which pays for it. The colleges must also recognize that their human charges cannot be trained by "internal" experiences alone. The questions to be answered are: How much can the instructional efforts capitalize on previous "know-how" (secondary school learning, on-the-job experiences etc.)?; What are the appropriate rhythms of work and study?; What task forces of community participation are entitled to and essential to deciding alternatives in learning experiences?.

Before the 1971 Carnegie Commission recommendation regarding less time involvement for post-secondary learning programs is "swallowed whole," the community college should painstakingly masticate the meaning and ramifications of such an enticing morsel. Available data concerning its students reveals that because of essential remediation, the sizeable percentage engaged in related employment, and the nature of continuing education curricula, these individuals need *extended* time to attain their educational goal.

7. Student Personnel Follow-up

Efforts in this category are perhaps more parallel to other higher education institutions' research than those previously mentioned—(what happens to those who enter, those who finish, etc.). However, community colleges must give greater institutional research emphasis to the extent to which the curricular programs really do assist students in

preparing for entering, and making progress in their chosen careers. Also, it must be decided which hard data should be acquired regarding occupational benefits students receive.

8. Public Relations and Citizen Participation

As a community entity the two-year college has a responsibility to identify and explain its true character and services on a perpetual basis. Public discussion of campus endeavors and trends is vital. Nevertheless, questions to be studied are: What does the public want to know and *need* to know about the community college? What degree of force or influence should the advisory bodies be encouraged to exert?

9. Master Planning

Perhaps institutional research for community colleges pivots around and gives direction to just *one* item—the master plan. Although Friedman of Chicago City College recently cited educational master planning as the "dehumanization of education," junior or comprehensive type institutions cannot afford to duplicate services, lack articulation with universities, business or industry, or spin aimlessly on their axes allowing urban development to move toward becoming (as Buell Gallagher has said) stone forests of non-community. Consortia of community colleges, whatever their watershed, must research as a "joined institution" what master plan, based solely on mission, can best serve the masses of human life now desiring an opportunity for post-secondary education.

IN CONCLUSION

The community colleges, in my opinion, (although admittedly a generalization) simply have not yet investigated or judged what they need to know for responsible scientific institutional decision-making. This paper has suggested several categories into which inquiries should be made to determine what research data could be valuable. If comprehensive two-year institutions are to become a new staging ground in the community for relevant relationships between thinking and performing, learning and working, and to become the dynamic force in creating new possibilities for excellence in human development, commitment to and cooperative endeavor in institutional research must become significant realities in community colleges.

ADMINISTRATIVE POLICY FORMULATION

THE ROLE OF INSTITUTIONAL RESEARCH IN THE DEVELOPMENT OF FINANCIAL POLICIES

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Since institutional research traditionally has been concerned with those areas of college and university administration in which there is a surfeit of detailed information, it is anomalous that, apart from work done for state systems of higher education, there has been to date very little direct involvement of institutional research in the nuts-and-bolts type of problems associated with spending money. There exists more detailed hard data about finance than about any other aspect of higher education, and it is widely accepted that in its usual form it is relatively useless for effective long-range decision-making. Truly, a made to order situation for the information specialist!

There are several explanations for this situation, not least of which has been the overwhelming concern of higher education over the past twenty years with the problems of expansion—problems which, in a context of wide and generally uncritical public and private support, tended to minimize the need for close control over expenditures. In this atmosphere the yearly budget generally has been considered a necessary evil, medicine to be gulped down as quickly as possible. Faculty and academic administrators have long seemed to agree that close financial control and academic progress are somehow antithetical. Institutional research, which over-all has been more academically than business oriented, has tended to go along.

In the past two years the situation has changed dramatically, however. Budgetary problems are now in the forefront, to be faced by virtually every institution of higher education in the country, and it seems inevitable that institutional research's contributions to institutional effectiveness will be reconsidered in the light of new priorities.

The specific purpose of this paper is to explore the question of whether there exists for institutional research a role in finance that parallels the roles it has successfully assumed in the past with regard to enrollment planning, space utilization and the allocation of teaching resources. It is assumed for purposes of discussion, that institutional research would not have final responsibility for data collection, nor participate directly in the making of policy decisions.

The following remarks are most relevant for an office of institutional research with one or two full-time analysts, a secretary, and some student research and clerical assistance, operating in a college or university of small to medium size. If the conclusions drawn have any validity they should apply to all institutions in one way or another.

Space does not permit an adequate definition of terms, but it should be noted that "policy" as used here can refer to any or all of the following: authoritative directives, written or unwritten operating procedures, and long range plans to the extent that they reflect formal commitments. "Financial" refers to fund management, capital investment, budgeting, and control procedures. "Development" I would contend is indistinguishable from "decision making." Unfortunately both terms have degenerated through over use, but there seem to be no others. "Role" needs only the comment that it is easier to play one than to have one.

The discussion should begin, I think, by considering the limiting conditions or constraints under which financial policies are developed in higher education. These define the situation in which institutional research may or may not be able to make contributions without danger to its own identity and general usefulness.

The first and most important of these constraints is the nature of colleges and universities as non-profit organizations. Colleges are not businesses, and financial policies that make excellent sense in the one context may not at all make sense in the other. As an example, it can be reasonably argued that running a small deficit every year in a college provides the essential stimulus, both for institutions and donors, for drives to raise operating funds. I would defy anyone to apply this to business, by even the most tortuous analogy.

Non-profit organizations of most types are able to exist at all only insofar as society accepts an obligation to support them, from private and public sources, because they are worthwhile in themselves, cannot be expected to be self-supporting without in some way subverting their basic nature, and return real, if indirect, benefits to society. Consequently, as financial policies in business are judged ultimately by how much money is earned, financial policies in colleges and universities should be judged by how effectively money is spent.

This may seem to ignore the overwhelming problem of fund raising. In this context, however, I believe that policy is of very little relevance, beyond the basic injunction to fund raisers to raise as much as possible. No institution can develop a policy on matters beyond its control, and neither governments nor private philanthropists can be coerced into giving, no matter what the need. Financial policy is concerned with what happens to the money that is available.

The crucial and distinguishing administrative problem of non-profit enterprises is that there is not a single, easily understandable controlling standard of reference that can be appealed to in judging policy effectiveness, as profit, or possibly return on investment, can in business. A business may not be single-minded and business-like about its own operations, but when internal controversies regarding financial policies erupt, appeal to profit often clearly identifies one policy as 'good' and another as 'bad', and leads directly to remedial action.

Is there any kind of controlling standard for non-profit organizations? Financial policies in non-profit organizations can certainly be considered effective if they (1) assess future income in realistic terms, (2) make no commitments in excess of estimated income, (3) understand the essential resource needs of all existing programs, and (4) commit available resources to these programs as economically as possible.

What this boils down to is that nonprofit organizations must pay very close attention to budgeting, as business must be primarily concerned with income. In practice this rarely happens, however. It is almost axiomatic that success in fund-raising deprives most nonprofit organizations of the motivation for achieving close control over expenditures; and when the money runs out, we tend to react, not by revising budget procedures but by indiscriminate slashing of expenditures. It is unprofitable, however, to waste time regretting what seems to be an irradicable fact of human psychology. It should only be noted that with hard times upon us, we are much farther behind than we should be in developing effective methods of budgetary control.

A second constraint on financial policy development is that the majority of significant decision-making positions in the academic world are held by individuals whose ultimate dedication is to teaching and to their fields of study, not to professional management. This does not have to result in bad administration, but normally, money matters, which always seem a bit grubby in the groves of academe, are not given sufficient attention, and highly intelligent men often flounder helplessly when forced to deal with routine financial reports and the basic concepts of accounting and financial control.

A related problem is the difficulty academic administrators have in relating to the financial staff members of their institutions. On the unexamined assumption that finance is a technical specialty—which apart from accounting it is not—business and finance offices are set up as discrete units, generally isolated from the rest of campus, and staffed with business-oriented personnel. The result is a cultural impasse; since the academicians and the business staff come from two different universes of discourse, mutual mystification and misunderstanding run rampant, and the very individuals who, in virtue of their responsibilities should be expected to exercise the most initiative in developing sound financial policies, generally play only a minor role.

A third constraint arises from the nature of higher education itself, dealing as it does with the complexities of specialization and the rapid, unpredictable proliferation of new branches of study. The possibility of any one man adequately understanding what is happening on even a small campus is next to nil. Eric Ashby put it neatly when he described the principal job of the college president as "navigating areas of ignorance." With lack of understanding it becomes virtually impossible to bring a strong central force to bear upon the course of academic development without running the risk of doing substantial if unintentional damage to important fields of study.

A final constraint arises from social and political pressures for a number of special expenditures which most institutions, if left to their own planning, would as soon not make. The outstanding example is the devastating effect of the Second World War and weapons development, to the extent that at least one chancellor referred to education at his institution as a war casualty. Another example is the continuing and hardly rational expectations of many parents (and legislators) for colleges and universities to exert over their offspring, who after all pass into adulthood in their undergraduate years, a degree of coercion and control that they could not conceivably exercise at home. The students too have their demands, to be able to "play generational house" with campus facilities.

Needless to say the examples could be multiplied. They are all expensive, and yet they all have to be dealt with. They are part of the contract society feels it has with higher education—protection and support in return for meeting what can be unexpected and highly embarrassing specific demands. Meeting the demands is generally expensive; but the alternative, a withdrawal or reduction of outside support, is usually even more so, and colleges and universities must come to some kind of understanding with the pressure groups that beset them.

Such accommodations, however, can work against whatever cohesion of program individual institutions manage to achieve, and even further limit the area of deliberate choice in establishing financial policy.

The total impact of these restraints on the development of effective financial policies would not seem to provide much leeway for deliberate and coherent policy development. But if we accept, as I think to be true, that financial policy development has been to date one of the least examined aspects of college and university administration, it is not unlikely that closer examination may reveal, perhaps along with some new difficulties, opportunities for positive action of which we are now unaware.

There is another reason, too, for optimism. The constraints sketched above are after all general conditions which vary according to time, place and particular circumstances. They can be condensed, I think, into a number of more specific problems which may be easier to handle and may provide considerable leverage for individual institutions.

Briefly I would identify three immediate needs that, if satisfied, would provide good starting points for gaining more control over the financial resources of higher education.

First, we need much better understanding of the future costs of academic programs. Commitments to new programs and to expansion of existing ones are often made in the dark. Key academic personnel do not communicate clearly to the administration their concepts of how their programs should be developed; or the administration does not communicate back essential information about the limitation of institutional resources or the priorities of other programs. We prefer to 'play it by ear', which is another way of saying that we generally don't see where we are going. The result, of course, is that programs that begin with one man and a part-time secretary can shortly balloon into budgetary ogres, with ravenous appetities for money, people, equipment, and space.

Second, perhaps more than anything else a majority of

our institutions need drastic improvement in their formal budget procedures. The problems of allocating resources are serious enough without the handicaps that come from too few people with too little information trying to make too many decisions in too short a time. To be obvious for a moment, well begun is half done—a phrase, incidentally, that came from Aristotle, not our grandmothers.

A realistic budget calendar; decomposition of the general budget into workable sub-budgets; preliminary consideration of these separate budgets by the people most directly concerned; early establishment of guidelines; provision of adequate information on costs, actual and projected, of all programs which will be up for policy decisions; adequate records and timely communication of policy decisions—these are only a few of the ways in which rationality and foresight can be encouraged in the preparation of the annual budget.

The third and perhaps most perplexing need of all is to reconcile positive central financial control with flexibility and adaptiveness at the departmental level.

At this point, it may have become clearer what kinds of contributions institutional research can make to financial policy development in relation to the general constraints and specific issues already discussed.

A most important contribution would come from taking budget data and casting it into a form more directly usable by administrators who set budgetary policy. This would primarily involve the preparation of budget histories, and, as a logical development, budget projections. Few controllers' offices have the staff to prepare this type of information beyond the usual three-year, actual-budgeted-projected summaries of individual accounts. From these histories it should be possible also to prepare a narrative presentation for budget committees that focuses on currently significant problems. Such a presentation is the best device I know of for encouraging intelligent, policy-oriented discussion.

This may seem a routine and time-consuming task; yet its potential for improving the climate in which financial policies are developed is considerable. In the words of Aaron Wildavsky, "the way a budget is arranged suggests ways of thinking and comparison and . . . if you change the form you change the kinds of calculation and the probable outcomes."

Another important contribution would be the involvement of institutional research in conducting academic cost studies, particularly in the early stages of program development. A business office can eventually assign detailed costs based on actual experience, but it cannot do this until the proposed program is relatively fixed. Often the erroneous assumption is made that the long-range costs of a program have been firmly established, when all that has really been presented is a request for start-up funds.

The need is for realistic general estimates preliminary to those of the business office. To do this it is necessary to establish cost parameters based on a mutual understanding between academic staff and administration of the implications and key elements of what is being proposed. This type of work is, I submit, quite compatible with the traditional contributions of institutional research.

As a part of such presentations institutional research also may be able to assist departments in preparing cost estimates for more than one level of program development, representing reasonable if not optimal alternatives. There are more ways of developing sound academic programs than we are commonly aware of; administrators are continually frustrated by the strictly go/no-go choice without options that the traditional budget system imposes.

These specific contributions of institutional research to the development of financial policies can be seen, I believe, as differing manifestations of a special role that perhaps no other office on campus can exercise as effectively: that of interfacing between the academic staff and the business-oriented aspects of central administration.

Where this role is successfully filled by institutional research, we might see several very important results. One is increased appreciation among faculty and academic administrators of the importance of financial control to the health and stability of the institution, and a consequent greater sense of shared responsibility for the wise and economical use of resources. Other benefits might well include a greater understanding on the part of business officers of the problems of academic program development, and a greater participation in the solving of those problems so far as they are effected by the need for money and other resources. There may even come about—can we dream?—an explosion of creativity and imagination among finance people regarding ways of making limited resources more flexibly available under the difficult conditions of academic life.

I would submit that to date there has not been much consideration of this kind of catalytic role for institutional research—a role that brings to bear on important financial problems, in Wilensky's admirable phrase, "the multiple perspectives of marginal men." Accepting as we all do the primacy and pervasiveness in higher education of humane, cultural and intellectual values, it is more than slightly inconsistent that institutional research accepts unquestioningly a restriction of its contributions to the analysis of quantitative information. Not that a careful quantitative analysis is not useful and even decisive in carefully bounded problem situations on a sub-optimal level; such situations, however, are not common in higher education.

We do need facts, there is not the slightest doubt of that—facts in their most elementary, Baconian, uninterpreted state. Institutional research has its roots in the prosaic task of gathering facts, and draws vitality and usefulness from them. But we do not need, nor will be ever have a complete rationalization of the decision-making process in higher education in which quantitative data rule supreme. No human organization works this way; *a fortiori* education cannot.

What we need, it seems to me, at the final stage of preparation for policy formulation is the interposition of informed, objective minds, whose opinion is valued precisely because it is informed and disinterested, capable of mediating between the real world of academia and the equally real world of money and physical resources.

For those of us in institutional research who wish for a greater influence on the direction of higher education, I

submit that this role is a powerful and eminently useful one.

In case that last sentence sounded like a peroration, it wasn't. I feel obligated to conclude what after all is only an exploratory discussion with a few remarks on the obstacles that seem to stand in the way of institutional research involvement in financial policy development.

One question immediately arises: what is there to prevent budget officers from establishing institutional research units within their own area of operation? Nothing, really, and in some institutions this may be a useful approach. Of greatest value to the individual institution are the spirit and techniques of institutional research, not the aggrandizement of an established institutional research office. If the resources are available to set up a second office, however, it will be necessary to achieve close coordination of effort between the two or mutually incompatible information systems will be developed, something institutional research has consistently and necessarily fought ever since it appeared on the national scene.

Another obstacle might be the background of institutional research men themselves, and their lack of interest in financial problems. This obtstacle may not be as serious as it first appears, I think. Finance, apart from the accounting function, does not require a great deal of technical expertise, and certainly institutional research specialists from diverse backgrounds have already made their mark in areas that have little visible relation to their degrees or to much of their previous work experience.

After all, institutional research is applied research, and it should deal with the information problems of greatest concern to the institution. In palmier days, enrollment and space projections, grubby enough in their own way, have been considered proper subjects for institutional research. As control of money moves out as a key issue of the 1970's, it would be strange if institutional research were not to be involved. Certainly, as has been said already, there is in finance one of the basic requirements for institutional research: a substantial amount of quantitative information that needs to be manipulated and analyzed before it can be used for making decisions.

Do most institutional research offices have the resources to take on financial problems in addition to their large range of other responsibilities? If not, there is always the possibility of a redirection of effort, and it is not unlikely that some administrators would prefer to forego routine analyses of space utilization for academic cost studies. The answer lies with the individual institution, and its own sense of priorities.

The most important obstacle to institutional research involvement in the development of financial policy, however, may be a political one. The allocation of resources is certainly the most sensitive area of faculty-administration relations, and on neither side may there be sufficient awareness of need for better information or for an informed and disinterested voice to justify inclusion of institutional research in the decision-making process. Certainly some faculty members prefer and indeed are very skillful at playing king of the mountain with the president and treasurer; and many administrators have had their fill of complex decision-making situations. Whether awareness of need will grow as time goes on and budget problems multiply is an open question.

I am reminded here of a story, and I leave it with you for the sake of whatever morals you may care to draw. A few years ago, at a private eastern university of some renown, two deans and two department heads developed a technique of deliberately withholding important requests from their budget submissions until just before final and presumably routine approval by the board of trustees. They then confronted the president in a group and presented their demands, having no difficulty in demonstrating that their programs, which were key ones, would collapse unless the additional funds were provided. The total was usually in excess of a million dollars. The president, I am sorry but not surprised to relate, ultimately had a heart attack, and the university has passed to public control.

A RATIO INDEX OF FISCAL-ACADEMIC EFFECTIVENESS

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The ability to finance programs is a reliable long-term indicator of financial health. Campus II, RRPM and other predictive models serve that purpose admirably, but such models can be misleading for short-run control and evaluation requirements. A grant may be desired, for example, because it will expand enrollment in a professional program; but the program may already be in qualitative trouble for the reason that there has been no short-term review of the effect of presently allocated costs on the program and the consequent drawing on other sources of income or even upon the income of other programs. New programs may grow by substitution, i.e. reallocation of funds from other existing programs. The money crisis, then, has provoked universal interest in planning, evaluation, and above all, in a control tool that will provide short-term (quarterly or yearly) indicators, based on cost analysis, for indicating the necessity for working out a system of priorities. Shall the principle for resource allocation be, or not be, to place resources where "demand" is greatest?

From the managerial viewpoint it is generally accepted that each department or unit should strive to "break even;" that is, the income generated by a department must be at least equal to its own costs (responsibility costs) plus the costs which are allocated to it from the college and administrative overhead pools. But few departments apparently have understood that the costs of their program include allocated costs. The proposed ratio index is control device and is based upon translating into educational use for each department such concepts as contribution margin, responsibility costs versus allocated costs, and break-even analysis. Other control techniques are associated with the proposed index, such as staffing standards and enrollment projections; but the ratio itself expresses a relationship between expected revenue from all sources (such as tuition from credit hours generated at various levels and other internal-external support) and faculty costs, since faculty cost is, within limits, the most controllable cost in the department or institution.

The first requirement is to establish for the previous year the relationship between departmental costs (for which the chairman is responsible) and allocated costs (all college and institutional overheads). Based on the previous year's analysis, a department can be given quarterly and yearly a chart indicating the number of dollars that will be needed for every dollar in faculty costs. The ratio of expected revenue from all sources and faculty costs can be individualized for each department. It will indicate whether the department is a break-even department (i.e. costs and income balance), makes a contribution (income exceeds costs), or is non-break (its costs exceed assignable income).

The ratio index assigned to a department may be one of two kinds: a standard or break-even ratio on a university-wide basis for allocation of overhead (common in state cost studies); or a standard or break-even ratio for a particular department. The standard or break-even ratio of the second kind, i.e. a ration for a particular department, is developed with the following elements for the fiscal year:

1. DEPARTMENTAL FACULTY COSTS—Includes all budgeted expenditures for full and part-time faculty salary and graduation assistants (regardless of support source);
2. OTHER DEPARTMENTAL COSTS—Includes all other budgeted expenditures for the department;
3. COLLEGE ALLOCATION COSTS—Those budgeted expenditures of the college which are allocable—according to a costing principle—to the department (preferably by means of specific identification of college costs, if possible);
4. INSTITUTIONAL OVERHEAD—All other costs of the institution (except auxiliary enterprises) which are allocable to the department—again according to an adopted costing principle.

An example may clarify the calculation of the ratio:

Description	Amount	Per Cent
Faculty cost of a dept.	$175,000	35
Other dept. costs	35,000	7
College costs allocated	90,000	18
Institutional costs allocated	200,000	40
	$500,000	

Ratio calculation: 100 divided by 35 = 2.86

Faculty cost is thirty-five per cent of total departmental cost which indicates that a ratio of revenue to faculty cost of 2.86 to 1 is needed to break even; therefore, the standard ratio for this department would be 2.86 this fiscal year. The second measurement required is the actual ratio of revenue to faculty cost for the department, calculated on a quarterly basis as follows:

$$\frac{\text{Tuition income plus external support for faculty and graduate assistant activities}}{\text{Faculty and graduate assistant costs}}$$

Tuition revenue—Estimated on the basis of credit hours generated by courses offered by the department.

External support revenue—Available either through cost study data on faculty assignment distributions or from the comptroller's office.

Faculty cost—This figure should include only the faculty cost applicable for the period in question. For example, a faculty man assigned to teach three of a yearly nine-course requirement would have one-third of his salary allocated to a quarterly period.

In contrast to the standard or break-even departmental

ratio designed departmentally, there may be a standard or break-even ratio on a university-wide basis. To determine on a university-wide basis the allocated overhead, the calculation usually results in a lower ratio for some departments to meet:

Total university faculty costs . . . $ 4,200,000 = 42%
All other costs
(except auxiliary enterprises) . . . . . 6,800,000 = 68%
$10,000,000

Ratio calculation—100 divided by 42 = a ratio of 2.38.

This standard university ratio, 2.38, is a poor standard, since it fails to take into account the resources allocated to the department in question in space utilization, equipment, supplies, library, and other "usage" elements. But the method seems to be common to state costs studies, where the principle is that of allocating overhead on the basis of proportionate faculty costs.

To extend the applicability of a standard ratio (a university ratio in this example), assume that the minimum ratio of 2.50 is needed for a department to "break even." The department then must plan that "a" man earning $12,000 must generate $30,000 in tuition revenue, if one faculty appointee is to cover all of the the per-man costs along with allocated costs. This condition means, then, that "a" man must generate over the 834 credit hours at the day tuition rate of $36 per credit hour. Other formulae are required to establish the relations among staff members, student ratios, sections required, section sizes, and average teaching loads, to establish break-even requirements. But the ratio itself can be used to review the efficiency of course-offering planning by the chairman. With five full-time men, and three courses per man being the criterion, the chairman has at least fifteen course assignments or their equivalent for instruction, research and public service. At one extreme the chairman can release all of his staff from teaching and assign them to university or externally-supported non-instructional activities. Conversely the chairman can assign all of his staff to instruction and plan course offerings which would be fully enrolled, providing an excellent fiscal return (as well as perhaps meeting the academic needs of students) but not necessarily a desirable educational policy. The ratio, then, while not evaluating faculty assignments, may give an index of the efficiency of the assignments, although research in the area of planning faculty assignments for optimal academic-fiscal outcome is not yet available.

The ratio described was developed for the use of general administration and for departments who wanted an easily understood means of pointing to losing operations, and for seeing mo[illegible] accurately where resources were being expended generously or perhaps too meagerly within a department. Consider a mathematics department with a university-wide ratio for two quarters of 2.64 and 2.75 (in comparison with an expected university ratio of 2.50). A detailed analysis might show something like the following: The department is split into two units. One unit consists of courses, credit hours, and costs applicable to liberal arts courses, school of education courses and general education mathematics courses. The other unit consists of only the courses, credit hours, and costs associated with business mathematics courses. The outcome:

RATIOS

Term	Total Dept.	University	Business Math Courses	Other Math Courses
Fall	2.64	2.50	4.98	2.07
Winter	2.75	2.50	4.95	2.17

Are business mathematics courses high volume-low benefit (to the student) courses? Why has so much been "invested" in other mathematics courses? Is the faculty mix different in the teaching of selected mathematics courses? Are faculty teaching loads different? Class size? Are faculty assignments a mix of instruction and research in one unit?

USING QUARTERLY COST STUDY RATIOS

The ratio index is simplistic and unsophisticated, but is a measurement any administrator seems to be able to use. The ratio is not a means of evaluation but provokes questions of that order. In addition, it serves an immediate policy purpose of controlling expenditures and evaluating the consequences of allocation of resources. One of its weaknesses is that it uses the past year's relationship of allocated costs to responsibility costs rather than the current operating budget's relationship of proposed expenditures for the current year to faculty costs (for which a ratio may be devised). A ratio could also be devised for projected costs and performance measurement. The ratio does not replace analytical study of costs per credit hour by student level, by major, by level of course, or by program, nor does it replace cost-income analysis by several costing centers or income-generating subcenters. Academically, it cannot be considered feasible to limit resources to a department on the basis of income, nor can a university eliminate any department or every department that is non-break-even. On the other hand, the number and incidence of non-break even departments can be the basis of asking questions about academic priorities and fiscal effectiveness, i.e. cost-effectiveness and/or cost-benefit analysis.

The assumption of this presentation is that the generalized ration may be useful for those institutions where income is substantially made up of tuition as well as some externally supported research and a few doctoral-level programs. Such institutions must put, as a first item on the agenda of academic-fiscal analysis, the need for establishing a system of priorities, although apparently no institution can claim that it it unnecessary to know in detail those departments or programs that are not break-even on the surface—with or without a grant. The purpose for establishing quarterly reports is to show trends, tendencies, and patterns of income versus cost in each department.

The quarterly reports are presumed to be useful, then, in indicating which departments should have priority in evaluation. If a department shows a ratio below that

expected in the fall, and the winter quarter continues the pattern, action can be planned in time for the upcoming budget review. The spring quarter report will add supporting evidence for the planned action or offer reasons for modifying or postponing the planned review. What type of evaluation and action could be taken by policy-makers?

Assuming a department is constantly in a non-break-even position, the following procedures (among many others already indicated) can be considered: 1) Determine the present mission of the department; 2) Evaluate the staff in the light of the mission; 3) Evaluate the enrollment in relation to the mission. If the enrollment is too low for the present staff, either recruit enrollment for that department or reduce (if possible) the staff. If the staff is unable to work toward the mission, then staff review may be the focus of study. One department, after prolonged study, re-examined its multiple missions and reduced the course offerings substantially after adopting a curriculum to satisfy the several "real" career goals of most students. And yet it provided assignments for faculty engaging in basic research and teaching-research, all within an expected output of course credit hours.

The ratio presumes, of course, prior policy decisions on a "desirable" curriculum and specific policies on workload, student flow models, costing principles, and cost projections for the future based on accompanying cost-effective evaluations, some approach to cost-benefit analysis and, perhaps more basically, examination of the organizational structure itself as a factor in cost control. Although the emphasis has been on evaluating non-break-even departments, no inference should be drawn that departments with ratios exceeding the standard should not be examined.

Nor can an institution assume that such a crude device as the suggested ratio replaces the need for long-term predictive models such as RRPM and CAMPUS II. The ratio index serves only an immediate policy purpose of controlling expenditures on a short-term basis and suggests only that a re-evaluation of academic-fiscal consequences of previous allocations of resources among departments and programs may be advisable. To sum: The ratio index, as an expression of cost-income analysis, has usually raised planning issues, such as the mission of the department in relation to the categories of students and/or faculty or other publics who will benefit from the resource allocation. Although not a means of evaluation, the (crude) index may be utilized to point to programs or departments which suggest the need for immediate re-evaluation. The index can provoke re-examination of the efficiency of course offering, planning, and faculty assignments in relation to the functions of the department and of the university. The design of a ratio chart will be unique to each institution. The following format (usually accompanied by a faculty-mix chart of courses offered by rank) has been useful at one institution.

Department _____ SUMMARY CHART Term _____ 1970-71

NUMBER OF COURSES . . . . . DAY _____ (%) EVENING _____ (%) GRADUATE _____ (%) TOTAL _____ (100)%

	Lower Division		Upper Division		Unclassified		Grad I		Grad II		Unclassified		TOTAL	
DAY CREDIT HOURS:	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(100%)
EVENING CREDIT HOURS:	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(100%)
GRADUATE CREDIT HOURS:	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(100%)
TOTAL CREDIT HOURS:	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(%)	_____	(100%)

TOTAL FACULTY COST (Chart II) $ _____ Full-time $ _____ Part-time $ _____ GA's $ _____

TOTAL TUITION REVENUE $ _____ Full-time $ _____ Part-time $ _____ GA's $ _____

TOTAL EXTERNAL SUPPORT REVENUE $ _____

TOTAL REVENUE $ _____

CONTRIBUTION MARGIN (LOSS) $ _____

RATION (REVENUE TO TOTAL FACULTY COST $ _____

DESIRED REVENUE $ _____

DIFFERENCE BETWEEN TOTAL REVENUE AND DESIRED REVENUE $ _____

CREDIT HOUR BREAK DOWN	DAY	EVENING	GRADUATE
Departmental Courses	_____	_____	_____
De Paul College Courses	_____	_____	_____
Others:			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
TOTAL	_____	_____	_____

COST PER CREDIT HOUR BREAK DOWN	UNIV. SUPPORTED		EXT. SUPPORTED	
Direct Instruction	_____	$ _____	_____	$ _____
Indirect Instruction	_____	$ _____	_____	$ _____
Research	_____	$ _____	_____	$ _____
Public Service	_____	$ _____	_____	$ _____
Administration	_____	$ _____	_____	$ _____
F.P.E.	_____	$ _____	_____	$ _____
I.U.	_____	$ _____	_____	$ _____
TOTAL	_____	$ _____	_____	$ _____

TOTAL COST PER CREDIT HOUR $ _____

THE OPEN SYSTEMS UNIVERSITY AND ORGANIZATIONAL INTELLIGENCE

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INTELLIGENCE AND THE UNIVERSITY

The university can be likened to open systems of the natural types, i.e., biological, chemical and physical systems. This organizational understanding of the university is based upon the work of von Bertalanffy, Buckley and others.

All open systems are energy systems. Matter and the energy encased therein are imported into the system from the environment. It is "through-put" or transmuted into some product form that characterizes the system. The transformational processes are anabolic or catabolic, to use the biological terms for build-up and breakdown processes. Also, the processes tend to be irreversible. Once the product is produced, it is exported into the surrounding environment. The cycle begins anew with the system being re-energized from the resources of energy-locked material in the environment.

Open systems exhibit some remarkable properties. One of these properties is that of steady-state. The system remains constant at a point that is a significant distance from true equilibrium and thus capable of doing work, such as the import and export of materials, the functioning of build-up and breakdown processes, and the operations of continuous irreversible processes.

A second remarkable property of open systems is that derived from the steady-state characteristic, viz., equifinality. Despite different initial conditions and after disturbances during the processes, the same final state is achieved by the system in steady-state.

A third remarkable property of open systems is seen from the perspective of thermodynamics. From this viewpoint, open systems can maintain themselves in a state of high statistical improbability, of order and organization. According to the second principle of thermodynamics, the general trend of physical processes is toward increasing entropy, viz., states of increasing probability and decreasing order of chaos or tendency toward equilibrium. Living systems maintain themselves in a state of high order and improbability. They may evolve toward increasing differentiation and organization.

In parallel form, the university energizes itself from the social and economic environment through inputs or material resources, personnel (professional, non-professional, and students), knowledge, ideas and skills. The university organizes, transforms and produces out of the total reservoir of "energy" such things as: (1) physical resources: buildings, laboratories, libraries and equipment; (2) services: managerial, instructional, support; (3) intellectual processes: inquiry, learning, creativity; (4) human capital: educated manpower; (5) new sciences, new arts and societal criticism; (6) direct social service. When needed, the university re-energizes itself through new material resources, new personnel, new sciences, new ideas, and new goals to service for community betterment.

The university is an open system of high statistical improbability and order. It is a complex system of open sub-system units. These sub-system units could be departments (academic, administrative, service), decision-making bodies (faculty senates, boards of trustees, administrative councils, union negotiating groups, student government), large sub-units (schools, colleges, quasi-independent programs in curricula or research, intra-organizational committees). Within any given university, the constituent elements are energized by inputs of material resources, personnel, knowledge, ideas, and skills. The constituent elements organize and transform their total reservoir of energy into services and products which characterize the individual components because of their designated division of labor. The services and products are utilized by other internal components of the university or become the university's direct products and services which are returned to the larger community in which the university resides.

For the corporate university processes to operate effectively, cybernetic reality-testing must obtain. Organizational intelligence is the substance of the structural information which reflects the constraints in the environment. It is upon this structural information that the university computes the constraints or patterns of invariants found within the environment. Also, the intra-university environment for the several sub-units is reflected in organizational intelligence about that internal environment. It is at this level that most institutional research has been focused.

Be they trustees, presidents, deans, faculty, and/or students, university leaders are the agents concerned for the survival of the institution. They are the agents involved in institutional autonomy and the development of organizational identity. And university leaders are those agents active in the performance of organizational reality-testing. These leaders collect, collate, and integrate many pieces of organizational intelligence upon which they act and/or react through organizational means. As the university evolves into an ever more complex agency, the instrumentation of organizational intelligence becomes an imperative. Larger portions of the university's resources must go into the intelligence function of the university organization.[1] The creation of an office of institutional research or some comparable agency is a belated recognition of a felt need for university reality-testing to be instrumented. The history of such offices proves this to be the case.

A prolonged hiatus in feedback between an open system and its environment induces crisis. An open system can be starved of information about the constraint patterns within the environment; and thus, serious trauma if not death can be caused. The effects of sensory deprivation in human beings are well known; and the psychic and social effects of distorted human rearing are well documented.

Likewise, human organizations, including universities, can be traumatized quite seriously. Distortional sources in organizational intelligence are many. And an organization in crisis exhibits the pathology of disorientation (and more seriously dissociation), arising from a lack of reality-testing and the organizational intelligence derived therefrom. Wilensky, along with Fink and his associates, provides exceptionally clear descriptive patterns of these oganizational pathologies arising from inadequqte feedback.[2]

As used in this context, institutional research is the formal instrumentation of the organizational intelligence function. The purpose and form of institutional research are, generally, functions of the particular institution's biography. Questions on centralized or decentralized organizational intelligence activity, the line or staff status of the director of institutional research in the university organization, and the particular doctrine(s) on the nature of intelligence held and practiced are answered only by observing the particular university.

The fundamental administrative processes of decision-making, planning, and the management of on-going institutional operations require immediate knowledge about the status and character of the processes, the products, the services, and the operations of the university in terms of its constituent parts. Of course the utility of such organizational intelligence is the rational control and continuing guidance of the university while it is in transit toward a set of operational goals which its identity represents. The continuing process called monitoring (either systematic or occasional) is generally practiced. Regular sampling procedures, time series data, and the budget audit are examples of systematic monitoring. *Ad hoc* studies, such as institutional self-studies for periodic accreditation, reflect monitoring for specific reason, occasion, or mission.

Monitoring is not concerned solely with intra-university affairs. Organizational intelligence about the university's environment is crucial to its continued viability. The university's life processes of survival, identity, and autonomy are mirrored in its intersect with the larger society at several levels. The vectors of university relations are toward government, and the community, the economic sector, the professions and other social institutions, and the individual. Studies on the institution's graduates and dropouts, the public image and reputation of the university, governmental policies in funding, foundations' attitudes and other aspects of the "out there" world are necessary. But the primary sources of the university's organizational intelligence about the larger community are still rumor and the astute observations by those in university policy positions garnered in their relations with the social environment of the university.

THE NATURE OF ORGANIZATIONAL INTELLIGENCE

In psychodynamic and sociodynamic open systems, common sense and sophisticated inquiries are ambiguity reduction processes through which a person, an institution such as the university, or a whole society constructs a cosmology or *Weltanschauung*, tests its reality against that cosmology, and references its meaning thereform.[3] This was well understood by Dewey when he wrote:

> Inquiry is the controlled and directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original stiuation into a unified whole.[4]

Are there classes of human situations which tend toward ambiguity? I believe there are. In fact, I will further assert that these basic classes of indeterminate and ambiguous situations yield the basic patterns of inquiry that lead to organizational intelligence of the open systems university.

If Aristotle is read aright, he infers that there are three types of human "knowing" situations which tend toward ambiguity or indeterminacy. The first situation is the "What is it?" situation which Aristotle calls theoretical knowledge.[5] The second is Aristotle's productive knowledge, the human situation being characterized by the instrumental question, "How to do it?"[6] The third is the "What ought to be done?" situation, or Aristotle's practical knowledge.[7]

Offices of institutional research typically produce studies that are theoretical in kind. Systematic and *ad hoc* monitoring yield observations. When these are analyzed and structured to meet the need of knowing "What is the nature of the case?", the resulting propositions or conclusions are pieces of reality-testing organizational intelligence for the university. The indeterminate or ambiguous situation takes on the form "There exists an 'x'." Cost benefit analyses, space studies, student characteristic profiles, CUES inventories, and projections of all types yield propositions which assert the nature of the sought "x."

Techniques and methodologies are sets of productive propositions that have been developed to meet institutional research needs. The Russell-Doi manual for space utilization studies, academic prediction scales, Koza's systems approach to curricular planning and review, and the Judy-Levine CAMPUS simulation model reflect this type of creative work in productive information technology. And there is little doubt that there are a good many more such techniques and methods being developed in offices of institutional research in American universities.

The deliberative activity in decision-making processes rests upon organizational intelligence of the theoretical and productive types. Both of these types of intelligence can and are produced by institutional research offices or some counter-part thereof. However the development of practical propositions such as institutional goals, policies, and commitments of the broadest type is the prime responsibility of policy-making officers who require and use reality-testing information for sound judgments that are empirically based. Decision making is an axiological process; it is not a technical or engineering process. Thus the technocratic planner (be he in the business office, the development office, or the institutional research office) has two roles to perform. The first is the *ante-decisional* role of resource information consultant; the second is the *post-decisional* role of rational reifier of dreams. What remains to be discussed in this context is the intersect of values, decision-making and the university's institutional integrity-to-be.

AXIOLOGY, DECISION-MAKING AND THE UNIVERSITY COMMITMENT

Every social system has a rather stable hierarchical set of values at any given time. America's society is no different, for the ultimate justification of education at all levels rests upon the federal constitutional goal of the general welfare.[8]

Further, the American university, like other institutions in our society, is directed and dominated by a truncated categorical imperative—the duty to fulfill its aims. This not an easy task. Regardless of the manner or form in which the university's aims are cast, they become the criteria against which its reality is tested and measured.

Generally, decision-making in the university ought to be an ethical affair—an explicit ethical affair. How ethical are academic prediction formulae and cut off scores in admissions procedures? Is there an ethical content to the arguments over semester, quarter, and trimester systems? Is curricular relevance significantly measured by continuous student involvement? Are indifference curve analyses ethical criteria for curricular design? Is institutional research anonymity and "amoral" data reporting responsible behavior in the academic community which prizes responsibility and independency of opinion arising from competence? What is the proper moral use of data in educational decision-making? Though a given university's aims and policies provide some closure on such matters, the significance and efficacy of utlimate moral justification of the university (its aims, and policies, its personal and institutional acts) requires the study of those meta-ethical principles upon which ultimate moral judgments are based.[9] The hope and expectation is that the process of conscious and rational ethical discourse be used to work through to an ultimate justification of the university in a particular instance. After this ethical study, institutional decision-making will be qualititavely better and sharper. Intent and reality would be merged within the vitals of the university. The public secular university no less than the private and religiously-oriented institution has the obligation and the need for continuing ethical self-examination. Our students are painfully reminding us of that duty. This is a total university responsibility in which institutional research personnel have a role that is significantly prior and above the technical ordering of priorities by some simulation program. Indeed, the assignment of effective and efficient utilities would be derived from this prior axiological work.

There are two functions for institutional research in university policy development and administrative-instructional practice. The one function is to bring to policy development and university *praxis* in administration and instruction such knowledge and expertise so that the policy-makers and the educational practitioners can do their jobs better. Great care should be taken is using the institution's axiological framework as a valuational filter, by clearly stating the assumptive character of that filter. There are no autonomous and amoral facts of data. All observations are selectively defined and categorized by and for the prior axiological intents of the designers.

The second function for institutional research is to monitor and evaluate administrative and instructional practice against the aims of the institution. This monitoring and evaluating is a reality-testing function, so necessary to institutional vitality and effectiveness.

Of the latter function, there are some significant questions that need to be asked repeatedly. Some of these questions are the following:

1. Does the chief financial or business officer make curricular decisions? If so, how and why?
2. Do faculty members objectively evaluate instructional competence within their departments?
3. What is the evidence of the quality of service rendered by the counseling staff in the institution?
4. Is university trustee service competent?
5. What is the quality of the development program of the university?
6. Is student government an effective educating activity of the university?
7. What is the educational quality of varsity sports for the university students involved?
8. Are faculty hiring and firing practices humane and professional in character?
9. How effective is the university ombudsman?
10. What is the public image of the university?

These monitoring questions are most important; their answers indicate the productivity of the university compared to its aims. The answers to such questions will establish whether the university's porductivity is reified fact or wishful and pious expectations. To paraphrase Hume, ideals without facts are empty, and facts without ideals are blind.

The question of reality-testing for offices of institutional research needs to be raised. As responsible institutional researchers, do you raise and seek answers to the following types of questions?

1. How good are your services to the university? What systematic evidence do you have for your estimate?
2. Do you evaluate the quality of your regular monitoring systems; or do you react in a crisis-oriented manner?
3. What is the image and reputation of the office of institutional research on your campus? Have you brought in an outside consultant/evaluator to give you an objective report?
4. Does the administration monopolize your services?
5. Do faculty and students come to you for service and do you provide them with service? If not, why not?
6. What is the ethical character of your use of organizational intelligence on campus? What evidence do you have that your perception is shared by others on campus?
7. Have you had your "best" formal reports evaluated by impartial panels outside of your institution?
8. Does your office of institutional research investigate the effect of its services on the qualitative operation of your institution?
9. Do you farm-out or contract out internal research projects for reasons of better competence and/or

objectivity in the matter to be studies? If not, why not?

10. Do you deliberately seek to establish and maintain a low silhouette on campus and publish reports that exhibit broad "office" authorship? If so, why?

There is little doubt in my mind that such questions as these, when thoroughly investigated, would enhance the quality of cybernetic service to the university.

Sir Francis Bacon stated that knowledge is power. But it is the nature of power to be amoral, undifferentiated in effect, and incompetent. As agents with the duty to service the university's critical cybernetic needs, you know that the persuasive force of moral competence and professional skill can bring knowledge into a creatively differential and beneficial use. Only the highest validated values of the universtiy can inspire the use of organizational intelligence toward achieving its highest aspirations.

CONCLUDING NOTE

The open systems model of the university defines the function of institutional research to be a cybernetic one. The internal and external reality-testing function is a vital duty and a moral charge. Though policy makers and educational practitioners can carry on for a considerable length of time with organizational intelligence of low validity,[10] the gradual and cumulative results of low validity intelligence is organizational crisis. Therefore, the institutional researcher labors under a categorical imperative, a duty toward institutional integrity and survival. But more significantly, this categorical imperative rests as a creative opportunity upon the total university as community, no less for trustee and president than for faculty, students and the many valued service personnel.

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[1] For systematic propositions on the growth and development of the organizational intelligence function, see Harold L. Wilensky, *Organizational Intelligence: Knowledge and Policy in Government and Industry* (New York: Basic Books, Inc., 1967), pp. 10-16.

[2] *Ibid.*, pp. 175-178, and Steven L. Fink, *et al.*, "Organizational Crisis and Change," *The Journal of Applied Behavioral Science*, vol. 7, no. 1, January-February, 1971, pp. 15-37.

[3] For significant papers in this area, see Peter L. Berger and Thomas Luckman, *The Social Construction of Reality: A Treatise in the Sociology of Knowledge* (A589; Garden City, N.Y.: Anchor Books, 1967), and Peter L. Berger, *The Sacred Canopy: Elements of a Sociological Theory of Religion* (A658; Garden City, N.Y.: Anchor Books, 1969).

[4] John Dewey, *Logic: The Theory of Inquiry* (New York: Henry Holt and Company, 1939), pp. 104-105.

[5] Aristotle, *Physica*, ii.1, 3.194/b16-195/a26; *Analytica Posteriora*, ii.19.99/b15-100/b18; *Metaphysica*, i.198/a21-981/b10; *Ethica Nicomachea*, vi.3, 6.

[6] Aristotle, *Ethica Nicomachea*, vi. 4,5,7.

[7] Aristotle, *Analytica Posteriora*, i.33.88/b30-89/a39; *Ethica Nicomachea*, i.3.1094/b12-1094/b29; iii, vi. 8, 9.

[8] For the model of America's social value system in relation to American higher education, see James Steve Counelis, *American Government, Higher Education and the Bar* (Ph.D. dissertation, Library of Congress Microfilm, The University of Chicago Department of Education, Chicago, 1961), ch. V.

[9] For an effective introductory understanding of this meta-ethical study, see A. Phillips Griffiths, "Ultimate Moral Principles: Their Justification," *The Encyclopedia of Philosphy* (1969), vol. 8, pp. 177-182. For significant systematic study and commentary on values, see Denis Goulet, "An Ethical Model for the Study of Values," *Harvard Educational Review*, vol. 41, no. 2, May, 1971, pp. 205-227, and Clyde Kluckholm, "Values and Value-Orientations in the Theory of Action: An Exploration in Definition and Classification," in *Toward a General Theory of Action*, ed. by Talcott Parsons and Edward A. Shils (Cambridge, Mass.: Harvard University Press, 1959), pp. 388-433.

[10] Amitai Etzioni, *The Active Society; A Theory of Societal and Political Processes* (New York: The Free Press, 1968), ch. VI.

AN INQUIRY INTO THE RELATIONSHIP BETWEEN INSTRUCTIONAL COST PATTERNS AND ASSUMPTIONS INFLUENCING ANALYSIS OF BASIC DATA IN UNIT COST STUDIES

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A terse but forceful phrase in the introductory paper of *The Outputs of Higher Education: Their Identification, Measurement, and Evaluation*,[2] a recent publication of the WICHE PMS project, suggests that the higher education community is being "summoned to accountability." Those familiar with actions of state legislatures have no difficulty in attesting to the reality of that summons. As a result of both external pressures and internal initiative, individual colleges and state systems are taking a more introspective look at the relationship between resources applied and results achieved.

Among the analytical tools being used is instructional unit cost analysis. Instructional costs analyses provide vital information inputs to program management at the institutional and system levels and are fundamental to such activities as the development of planning models and budget formulas. This type of analysis produces a profile of costs per credit hour, usually by level of instruction and by field or taxonomy. The rationale is that costs do vary by level and field because of instructional strategies, salary patterns and personnel assignment, and program developmental status.

Many states have been active in the past decade in conducting such studies and using them as a basis for the development of a statewide formula for allocation of funds. Other states have moved to this type of analysis in more recent years, which is the case in my own state of Tennessee. Though the current ferment in studying the linkage between inputs and outputs in higher education may produce more sophisticated and appropriate indicators of instructional activity than the proximate criterion of student credit hours, it is probably that the study of unit costs in instruction will continued to be an important factor in decision-making at all levels in higher education in the immediate future. That knowledge of unit costs is an important variable in current budget and planning model work is well illustrated in current literature.[3]

Even though the fundamental objectives for the study of instructional costs are essentially the same, there are interesting differences reflected in procedure manuals used by various states and agencies. These differences are to be found in the assumptions influencing ways in which basic data are analyzed and may be specifically illustrated via the following two questions:

1. What criterion is used to allocate instructional salary costs to individual courses?
2. What criterion is used to allocate instructional salary costs to different instructional levels (i.e. lower, upper, graduate, etc.).

Options currently employed for the first question include (1) the allocation of salary dollars based on course credit value (if I teach four courses each having a value of three credit hours, then my salary is distributed equally to each of these four courses) and (2) allocation based on faculty report of effort (I indicate what percentage of effort is dedicated to each course and that percentage of salary is allocated to that course). For the second question, some studies allocate salary dollars to instructional level on the basis of course number and others on the basis of student classification. The selection of these and other allocation criteria can have an important influence on cost patterns and are of more than passing interest to institutions when it comes to budget time.

The remainder of this paper reports the results of an instructional cost study conducted at Memphis State University in the fall of 1970 in which the following two questions were engaged:

1. What changes in instructional cost patterns will emerge when instructional salaries are allocated to courses on the basis of faculty report of effort as compared to allocation based on course credit value?
2. What change in instructional cost patterns will emerge when instructional salaries are allocated to instructional level on the basis of course number as compared to allocation based on student classification?

The model for the study is given in Figure 1. The study was limited to a review of salary allocation only. We turn now to a consideration of results and the implications for academic management.

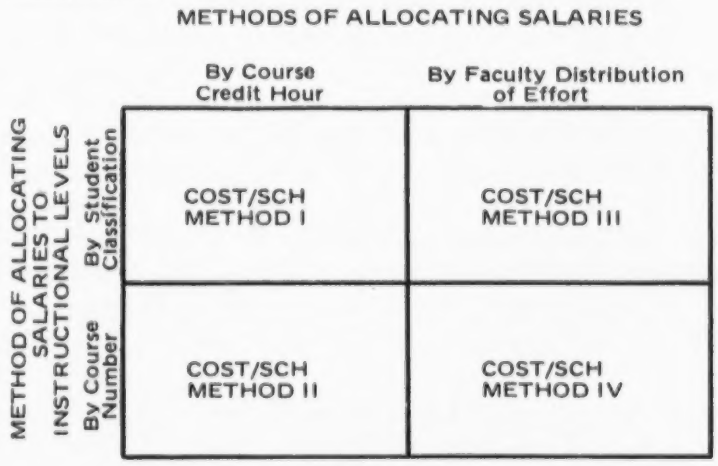

Figure 1.
DIAGRAM OF VARIABLES IN THE ANALYSIS OF INSTRUCTIONAL COSTS

PRESENTATION OF RESULTS

What happens to instructional cost patterns when allocation criteria are adjusted as outlined in the model of Figure 1? A preliminary picture of the change in cost

patterns for this inquiry can be found in Figures 2A and 2B. These graphical profiles reveal that:

1. There is a definite and pronounced stairstep increase in unit costs when allocation to instructional level follows course number rather than student classification.
2. There is a tendency toward higher unit costs at the doctoral level when allocation follows faculty distribution of effort rather than course credit value.

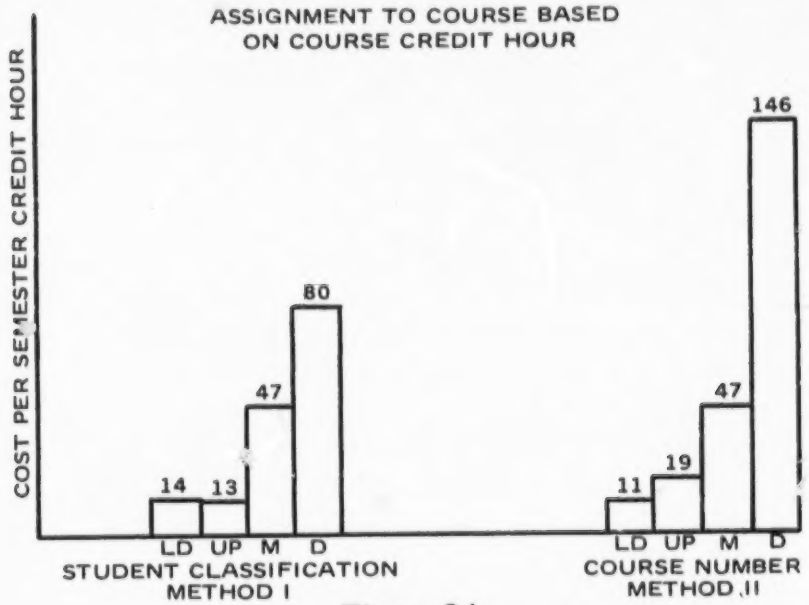

Figure 2A

SHIFT IN COST PATTERNS (PER SEMESTER CREDIT HOUR) AS A FUNCTION OF COST ASSIGNMENT TO INSTRUCTIONAL LEVEL

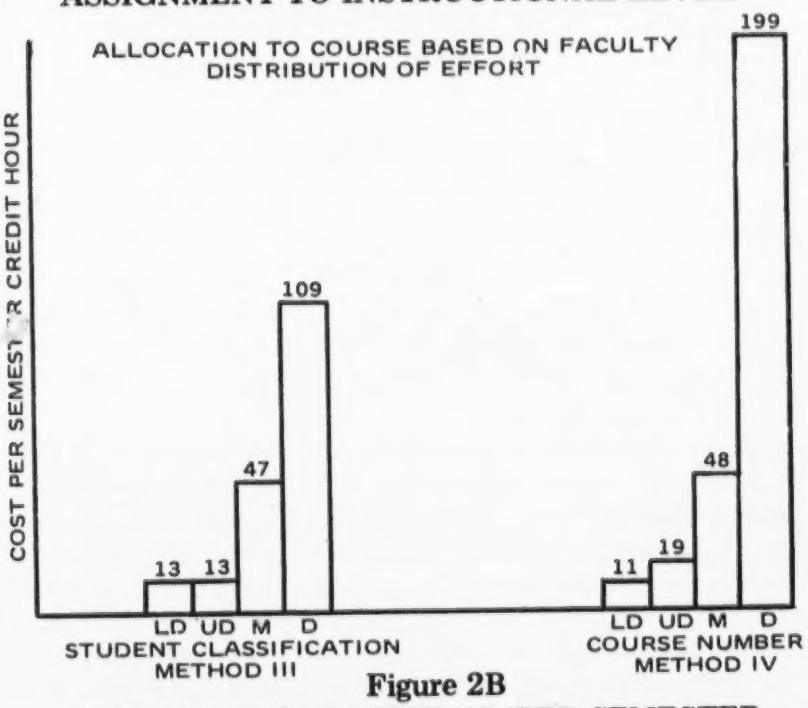

Figure 2B

SHIFT IN COST PATTERNS (PER SEMESTER CREDIT HOUR) AS A FUNCTION OF COST ASSIGNMENT TO INSTRUCTIONAL LEVEL

A point of particular interest, from both the institutional and systems perspective, is the differential between lower and upper division costs when allocation follows student classification. Figures 2A and 2B, indicate that there is very little differential between lower and upper division costs when allocation is by student classification. Yet there is a very clear differential when allocation is by course number.

At Memphis State, the conditions contributing to this kind of cost pattern can be found in the fact that a large portion of required bachelor degree requirements at the University is at the lower division level. For example, only 45 semester hours, out of 132, are required at the upper division; and for the B.A. degree approximately 58% of total work is required at the lower division level. Thus, there are large numbers of junior and senior students taking lower division work.

The magnitude of the shift can be seen in the following table which illustrates the change in credit hour production as a function of allocation criterion.[4]

	Allocation To Instructional Level By	
	Course Number	Student Classification
Lower Division	138,610	112,798
Upper Division	53,496	78,813

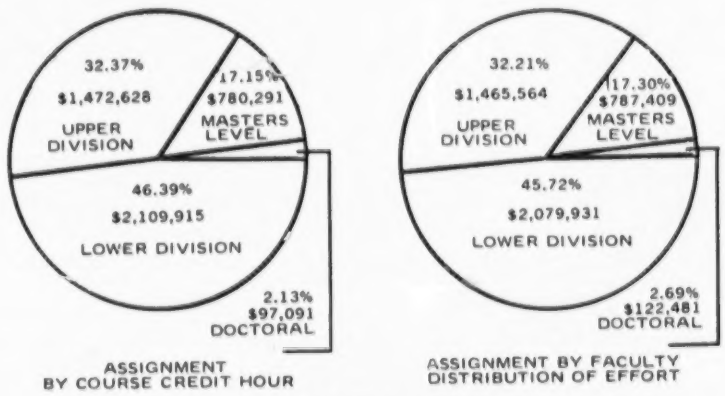

Figure 3

SHIFT IN TOTAL SALARY DOLLARS AS A FUNCTION OF ASSIGNMENT TO COURSES

Though the shift in credit hour production and cost patterns is rather dramatic when viewed this way, it is important as well to look at the movement of salary dollars. This movement can be seen in Figure 3. Note that the shift in dollars is less dramatic than the shift in cost per student credit hour. At the present time, Memphis State University has doctoral programs in three disciplines in the College of Arts and Sciences and in four areas in the College of Education; all of these programs are less than five years old. Consequently, the credit hour production at the doctoral level constitutes only a small portion of total credit hour production. The movement of a small amount of effort, and therefore money, from the lower division to the doctoral level can generate significant changes in cost per credit hour at the doctoral level. The pie graph of Figure 3 reveals that when allocation follows faculty effort rather than course credit value, approximately $20,000 in salary dollars is moved from the lower division principally to the doctoral division. The movement of this money is sufficient to cause the dramatic shift in doctoral unit costs shown in Figures 2A and 2B.

Figures 4A through 4D provide another perspective of shift in cost patterns associated with the four different allocation schemes. Again, we can see the lack of differential between lower and upper division costs when allocation follows student classification, but a marked increase in costs at the upper division when allocation follows course number. We can also see how salary dollars are moved from lower division to masters and doctoral work via the FTE figures given in the figures. When you follow faculty distribution of effort, note that there is an FTE shift from lower division to doctoral level.

Another important item of data found in these figures, at least from an institutional framework, is the range of unit costs found among the four methods and at the different levels of instruction. For example, at the lower division, the range of high costs is from $49 per student credit hour to $177; at the upper division the range of high costs is from $98 to $225. At the masters level the variability in high costs is dampened, but at the doctoral level, the oscillation is rather wild, with variability from $153 to $1047. These variations at the doctoral level can be better understood if we know that some of the departments offering doctoral programs tend to offer one set of courses open to both masters and doctoral students, with only the dissertation carrying a different number. Other departments offer a distinct set of courses beyond the masters degree level with a higher set of course numbers.

The data of Figure 4A through 4D reveal wide variations in minimum and maximum units cost patterns. What are the disciplines that are contributing to these variations? For the purposes of this paper, it is impossible to

ALLOCATION OF SALARY DOLLARS BY

ALLOCATION OF COSTS TO INSTRUCTIONAL LEVEL BY

		Course Credit Hour	Faculty Distribution Effort
STUDENT CLASS.	Average	$ 13.61/SCH	$ 13.34/SCH
	High	95.58	177.36
	Low	3.88	2.74
	FTE	320.63	314.80
COURSE NUMBER	Average	11.07	10.86
	High	49.36	91.47
	Low	3.88	3.59
	FTE	320.63	314.80
Total Dollars		$2,109,914.74	$2,079,931.06
Percent Budget		46.38%	45.72%

Figure 4A

SUMMARY OF INSTRUCTIONAL COST PATTERNS LOWER DIVISION- TOTAL UNIVERSITY

ALLOCATION OF SALARY DOLLARS BY

ALLOCATION OF COSTS TO INSTRUCTIONAL LEVEL BY

		Course Credit Hour	Faculty Distribution Effort
STUDENT CLASS.	Average	$ 12.92/SCH	$ 12.83/SCH
	High	110.12	169.25
	Low	3.45	3.49
	FTE	169.57	169.62
COURSE NUMBER	Average	19.04	18.91
	High	97.63	224.82
	Low	2.50	1.72
	FTE	169.57	169.62
Total Dollars		$1,472,627.79	$1,465,564.16
Percent Budget		32.37%	32.21%

Figure 4B

SUMMARY OF INSTRUCTIONAL COST PATTERNS UPPER DIVISION- TOTAL UNIVERSITY

ALLOCATION OF SALARY DOLLARS BY

ALLOCATION OF COSTS TO INSTRUCTIONAL LEVEL BY

		Course Credit Hour	Faculty Distribution Effort
STUDENT CLASS.	Average	$ 43.63/SCH	$ 47.23/SCH
	High	159.13	142.78
	Low	3.04	6.75
	FTE	81.23	81.14
COURSE NUMBER	Average	46.98	47.58
	High	170.37	142.78
	Low	3.04	8.68
	FTE	81.23	81.14
Total Dollars		$780,291.43	$787,409.17
Percent Budget		17.15%	17.30%

Figure 4C

SUMMARY OF INSTRUCTIONAL COST PATTERNS UPPER DIVISION - TOTAL UNIVERSITY

ALLOCATION OF SALARY DOLLARS BY

ALLOCATION OF COSTS TO INSTRUCTIONAL LEVEL BY

		Course Credit Hour	Faculty Distribution Effort
STUDENT CLASS.	Average	$ 79.79/SCH	$108.78/SCH
	High	153.15	538.25
	Low	35.98	56.36
	FTE	9.49	13.34
COURSE NUMBER	Average	145.91	198.93
	High	395.80	1047.67
	Low	45.00	43.13
	FTE	9.49	13.34
Total Dollars		$97,091.38	$122,481.36
Percent Budget		2.13%	2.69%

Figure 4D

SUMMARY OF INSTRUCTIONAL COST PATTERNS DOCTORAL DIVISION - TOTAL UNIVERSITY

examine the cost patterns for each discipline in the University, but we can examine patterns by groups of disciplines. We can also present a three way display of unit costs by level of instruction, by groups of disciplines, and by method of allocation. Figure 5 provides an example for lower division courses. Also available are data on weighted class size and average salary per FTE, which shed some light on cost variations.

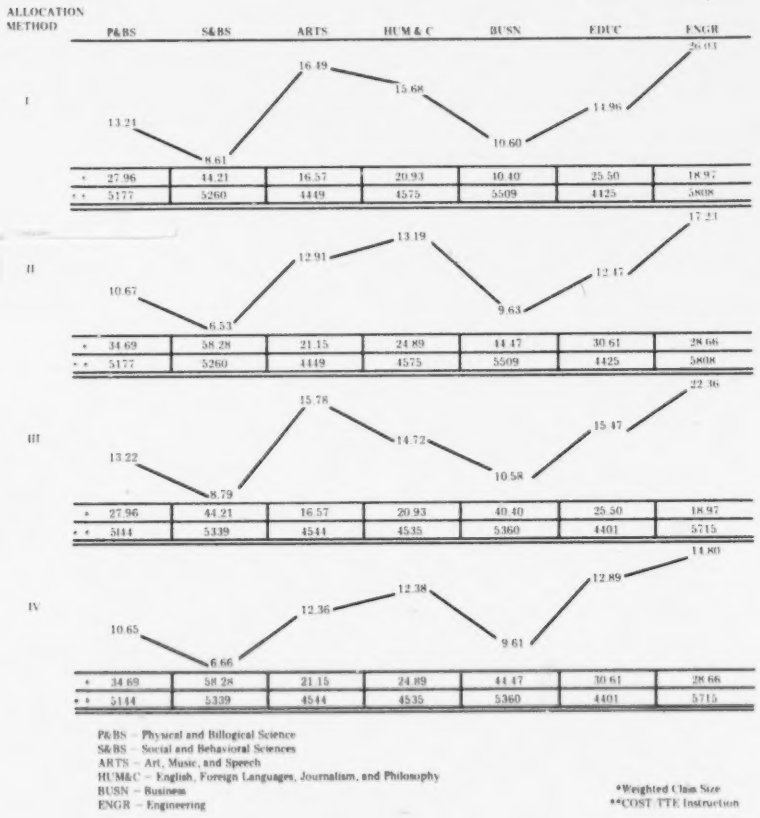

Figure 5
RELATIONSHIP BETWEEN INSTRUCTIONAL COST PATTERNS AND DISCIPLINES - LOWER DIVISION

As an example, note that at the lower division, the social and behavioral sciences have the lowest unit costs, with business being next lowest. These low unit costs can be attributed in large part to high average class size in these two areas. Engineering is high on all methods principally because of small class size and high salary costs per FTE. The variation in class size in some disciplines follows instructional strategies in those disciplines, whereas in Engineering the small class size is more readily attributable to the developmental status of that program.

There are no dramatic changes in relative position among the groups of disciplines at the upper division level, but there are certainly some at the masters level, where programs in education are the lowest in unit costs. Factors contributing to this pattern at the masters level can be found in class size and average faculty salary. Variation in costs at the doctoral level quickly isolate those disciplines where course numbering contributes to oscillation in costs. In chemistry and education, for example, course numbering generates only modest changes in cost patterns; but in history and psychology, where the same courses are offered to both masters and doctoral students, there are wild variations caused by following student classification as compared to following course number.

IMPLICATIONS OF RESULTS

There are a number of implications for program management at both the institutional and systems levels. Though we could invest considerable time exploring the action consequences of the results, time and space do not permit a complete investigation here. At Memphis State University, these data have been prime movers in causing us:

1. To take a more critical look at institutional identity in terms of defining those programs which provide the most harmonious and productive mix of resources and need.
2. To examine more carefully our curriculum decisions as they relate to program costs and to increase our sensitivity to the notion that decisions concerning program direction and strategy cannot be made in isolation from cost considerations—even to the point of such decisions as course numbering and curricular requirements.
3. To stimulate more thorough examination of the relationship between cost and quality. We recognize that current cost analyses provide somewhat primitive estimates of program performance to the extent that they do not directly refer to qualitative variables.
4. To foster development of a more complete program of academic management which will (a) permit the identification of faculty resource potential, (b) make clear the pattern of faculty workload assignments, and (c) provide bases for qualitative assessment of both personnel and program performance.

Our conviction is that these data will produce the same kinds of reflection at the coordinating level—but on a broader and more complex basis. These cost patterns confirm, for example, that careful attention needs to be given to different types of institutions in establishing budget formulas and planning models. Community colleges would certainly have an acute interest in any allocation scheme where the heavy credit hour loads and cost patterns of the senior institutions caused the average to drop seriously below their profile. And doctoral institutions would certainly have an interest in the wide variation caused by such differences as course numbering schemes. These and other questions will provide considerable challenge as we strive to develop more equitable and rational allocation schemes at all levels and to maximize program impact with resources allocated.

[1]Acknowledgement is due Mr. Jerry Matthews, Research Associate, Office of Institutional Research, Memphis State University, for significant assistance in the data analysis phases of this study.

[2]Ben Lawrence *et al.*, eds., *Outputs of Higher Education: Their Identification, Measurement, and Evaluation*, Western Interstate Commission for Higher Education—PMS Division, Boulder, July, 1970.

[3]See especially the following two publications by Warren Gulko: *Unit Costs of Instruction: A Methodological Approach*, Western Interstate Commission on Education—PMS Division, Boulder, January, 1971; and *The Resource Requirements Prediction Model 1 (RRPM-1): An Overview*, Western Interstate Commission on Education—PMS Division, Boulder, January, 1971.

[4]The two credit hour columns do not add because following student classification rather than course number for instructional level causes some credit hours to shift to other levels of instruction.

A FINANCIAL FLOW MODEL FOR DECISION–MAKING IN INSTITUTIONS OF HIGHER EDUCATION

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An institution of higher education is composed of a number of different organizational units. Each is budgeted for the expenditures required for accomplishment of its specific mission. However, in the conduct of the tasks related to the mission, a units is dependent generally upon services provided by other organizational units in the institution. Examples of this type of dependency are as follows: a course offered under the auspices of one academic department is taught by a member of the faculty of another; a research team is composed of personnel from several different units; and computer services are supplied on a centralized basis.

Because of the growth in both size and complexity of institutions of higher education, these interrelationships may have a significant impact on the financial resources required for operation of an institution. Particularly in view of the increasing severity of the problems associated with financing higher education, a need has emerged for a mechanism which is implementable within the scope of accounting systems as they exist in most institutions to determine the financial implications of both policy and operating options.

STRUCTURE OF THE MODEL

To date, studies concerning the interdependence of related activities have been mostly confined to economics, the most significant being that done by Leontief.[1] Important work was done in expanding the class of models using a linear flow methodology in a more general sense by such people as Rosenblatt.[2] In recent years, applications of this methodology to educational operations have been reported by investigators at a number of institutions of higher education. At The Pennsylvania State University, this approach was first applied by Raphael in 1966 when he established the feasibility of using this methodology to portray personnel money flows, material-service money flows and instructional activity flows.[3,4,5] This work was further extended and updated by T. K. Bennett,[6] and by Newton and Enscore[7] primarily with respect to the prediction of instructional activity.

A mechanism of this type may be developed by the formulation of the monetary flow in an institution of higher education as a linear-flow model. Using such a concept, funds may be considered as flowing into the various organizational sectors as a result of the budgetary process. These funds are viewed as originating with a single source, although it would be equally appropriate to provide a further subdivision of this source into both general and restricted categories. Portions of the initial budgetary allocation are then transferred to other sectors within the organizational structure and finally flow out as expenditures for personnel and for materials and services. The internal transfer of funds closely follows budgetary control procedures, wherein goods and services transferred between sectors are taken into account by debiting and crediting appropriate dollar amounts to the budget involved. For any one period of time, the input of funds may be related to the output of expenditures by a series of coefficients which describe quantitatively the distribution of input funds along prescribed paths. If these coefficients are stable or predictive over time, they may be employed both for control purposes and for evaluating the effect of different courses of action.

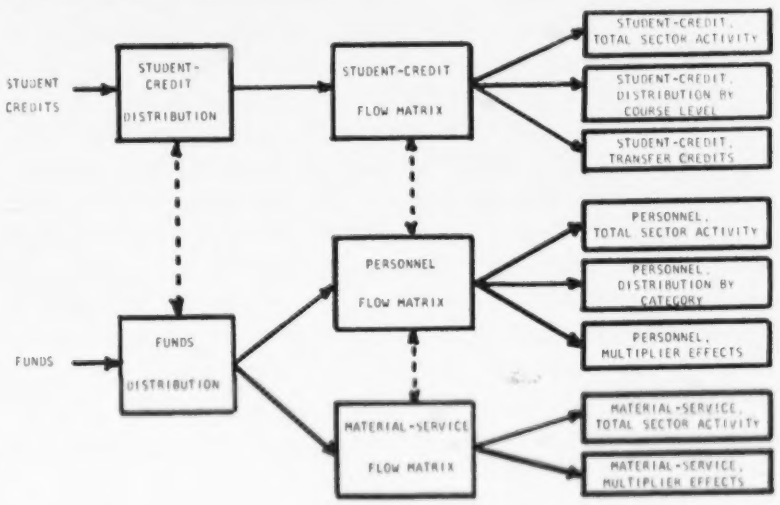

Figure 1

THE UNIVERSITY INPUT-OUTPUT MODEL

The structure of this model is shown in Figure 1. It consists of three major submodels. The funds allocated to each organizational sector are first distributed to the Personnel Submodel and the Material-Service Submodel. They are then distributed directly in their own sectors or in accordance with the historical flow pattern indicated in the respective money flow (technical coefficients) matrices. The submodels then generate various types of output information including total funds available for use by each sector, income and disbursement statements for each sector, and distribution of personnel funds over personnel categories both directly in a given sector or including the expenditures in other sectors after transfer. Though not dealt with in this paper, the third submodel, Student-Credit Flows, is also shown. It is included to show the availability of direct instructional activity information as well as to indicate the various types of costs per student credit which can be derived by relating the information from the various submodels. However, we confine our discussion here to the financial flow aspects of the model.

Originally a prototype university model was constructed consisting of 47 individual sectors plus 7 personnel category "closure" sectors. The feasibility of constructing and using this type of model was demonstrated with this

prototype and some of the examples to be shown are drawn from data generated through this prototype. Since then, however, the model has been updated and expanded into a 103 sector version.

Each of these sectors represents a budgeted work-center—or an aggregation of several—with a specific operational mission. Each sector is viewed as making expenditures for personnel and for materials and services and the model itself is composed of separate segments representing each of these two classes of expenditures. Within each of the two segments, expenditures may be made in one of two ways, either externally with the outside world or internally with other sectors of the organization.

PERSONNEL SUBMODEL

The financial flow within a system structure as described above may best be visualized by means of a small hypothetical example. For illustrative purposes a six-sector Personnel Submodel is shown in Table 1. In each row is shown the dollar amount and source of income, as indicated by the column name, flowing into each sector. The total income to a sector (extreme right hand column) is composed of payments for use of a sector's personnel by other sectors plus the direct allocation to the sector. On the other hand, expenditures made by each sector, designated by a column name, are distributed within the column to the sectors identified with each row. Those that are incurred directly with its own personnel in pursuit of its mission are shown in the last three rows by employee classification. The summation of the expenditures incurred by a sector are equal to the total income received by the sector.

The dollar amounts representing expenditures of a particular column sector may by expressed as a fraction of the total expenditures incurred by the sector, as shown in Table 2. Since the total expenditure of a sector is equal to its total income, these fractions—or technical coefficients of expenditures, as they are termed—provide a means of relating income to expenditures and provide the pattern of relationships among the various sectors of the model.

TABLE 2
Technical Coefficients of Expenditures — Personnel Submodel

		(1) Admin.	(2) Phys. Plant	(3) Library	(4) Arts	(5) Humanities	(6) Science
(1)	Admin.		.001				.001
(2)	Phys. Plant						
(3)	Library					.001	
(4)	Arts					.001	
(5)	Humanities				.038		.013
(6)	Science				.150	.027	
	Adm. Pers.	.495	.282	.166	.137	.085	.093
	Acad. Pers.	.070		.354	.457	.764	.835
	Svc. Pers.	.435	.717	.480	.218	.122	.058
Total		1.000	1.000	1.000	1.000	1.000	1.000

MATERIAL-SERVICE SUBMODEL

The Material-Service segment of the model is almost identical in concept and structure to that applicable to Personnel. The only exception involves payments for materials and services to the outside world, where only one type of payment is involved as contrasted to payments to the several classifications of employees in the Personnel Submodel.

MATHEMATICAL STRUCTURE

The sets of technical coefficients describing the distribution of expenditures of each sector among all of the sectors of the institution together with the direct allocation of funds to each sector provide a system of linear equations, the solution of which determines the total income available for expenditure by a sector for pursuit of its mission. These equations have the following form:

TABLE 1
Income and Expenditure Flow — Personnel Submodel

($1,000)

		(1) Admin.	(2) Phys. Plant	(3) Library	(4) Arts	(5) Humanities	(6) Science	Direct Alloc.	Total Funds
(1)	Admin.		2				4	1,649	1,655
(2)	Phys. Plant							1,880	1,880
(3)	Library					4		619	623
(4)	Arts					4		763	767
(5)	Humanities				30		42	3,883	3,955
(6)	Science				115	105		3,118	3,338
	Adm. Pers.	820	530	103	105	335	310		
	Acad. Pers.	115		220	350	3,020	2,788		
	Svc. Pers.	720	1,348	300	167	487	194		
Total Expenditure		1,655	1,880	623	767	3,955	3,338		

$$X_i = a_{i,1} X_1 + a_{i,2} X_2 \cdots$$

$$+ a_{i,n} X_n + Y_i \text{ for } i = 1, 2, \ldots . n$$

where: a_{ij} is the technical coefficient for sector j expenditures in sector i

X_i is the total income available to sector i

Y_i is the direct allocation of funds to sector i

$i,j = 1, 2, \ldots . n$

The above equation simply states that the total funds available to a sector—X_i—is equal to the income that it receives from other sectors in payment for use of its personnel—$a_{ij} X_j$—plus the direct allocation—Y_i—provided to the sector. Equations of the same form may be constructed for each sector of the model. If we can assume that the technical coefficients are either stable or predictive over time, then it is possible to use the model as a predictive tool.

In general, we know the various allocations to each sector, Y_i. We wish to find the total income available to each sector, X_i. These various values are found by solving the system of equations given above. In addition, the solution of this system of equations generates what are called "interdependency coefficients" which provide *direct* and *indirect* effects of fund allocations to one sector on the total income in other sectors of the model. This will be discussed further below.

DESCRIPTIVE INFORMATION

The model is capable of providing a wide variety of descriptive information concerning the financial flows in the organization. A few of these are discussed in the following material.

1. How funds are distributed between personnel and material-service expenditures: For example, in the prototype model the funds distribution proportions for the College of Science-Organized Research (Sector 42) were .475 for personnel funds and .525 for material-service funds.
   The total funds allocated were
   $$Y_{42} = \$2,159,300$$
   yielding personnel funds equal to
   $$(.475)\ (\$2,159,300) - \$1,026,000$$
   and material-service funds equal to
   $$(.525)\ (\$2,159,300) = \$1,133,300.$$
2. The pattern of fund transfers and expenditures both internally among sectors of the institution and between the sectors and the "outside world:" Tables 1 and 2 provide an example of this. The information is presented succinctly in two-way tables. Only six such tables are necessary to provide a complete descriptive picture of the financial flows of the university.
3. The total funds available to a given sector for personnel and material-service expenditures, including both direct budgetary allocations and income credit received through transfers from other budgets: This can be seen in the following Income-Expenditures statement for the Science sector obtained by placing the entries of row 6 and column 6 of Table 2 side by side, as shown in Table 3.
4. Response patterns, in terms of direct and indirect activity generated by a given sector's budgetary allocation:
   This information is available from the interdependency coefficients and the sector multipliers derived from them. For example, in the prototype model the interdependency coefficient giving the propor-

TABLE 3
Science Personnel Income-Expenditures Statement

($1,000)

		Income	Expenditures
	(1) Admin.		4
	(2) Phys. Plant		
	(3) Library		
	(4) Arts	115	
	(5) Humanities	105	42
	(6) Science		
Personnel Classifications	Adm. Pers.		310
	Acad. Pers.		2,788
	Svc. Pers.		194
	Direct Allocation	3,118	
	Total	3,338	3,338

tionate response of Science-Resident Instruction (Sector 41) to the direct personnel funds allocated to Agriculture-Resident Instruction (Sector 10) is

$$\alpha_{41,10} = .01336.$$

This means that approximately 1.3 percent of the funds allocated to Agriculture-Resident Instruction budgets will, directly or indirectly, find their way to Science-Resident Instruction budgets as internal income. The amount directly allocated to Sector 10 is

$$Y_{10} = \$958,000.$$

Thus, the amount eventually finding its way to Sector 41 is

$$\alpha_{41,10}\, Y_{10} = (.01336)\ (\$958,000)$$
$$= \$12,800.$$

Now the *direct* expenditure coefficient (technical coefficient) for expenditures by Sector 10 in Sector 41 for the prototype model is

$$a_{41,10} = .00173.$$

This gives the proportion of all income to Sector 10 which is transferred *directly* (in one transaction) to Sector 41. Thus, the amount transferred directly from the Sector 10 direct funds allocation to Sector 41 is

$$a_{41,10}\, Y_{10} = (.00173)\ (\$958,000)$$
$$= \$1,657.$$

Direct transfers from Sector 10 to Sector 41 amounted to only about $1,657. The remaining $11,143 in indirect fund transfers found their way to Science-Resident Instruction budgets by more devious multistage routes. An example of such a multistage transaction might be the purchase by Agriculture-Resident Instruction (Sector 10) of instructional services from personnel in Agriculture-Organized Research (Sector 12). Sector 12 might then, in turn, purchase research labor from Science-Resident Instruction (Sector 41), perhaps a biologist needed in agronomic research.

The sum of all the interdependency coefficients giving the response of each of the model sectors to the allocation to one particular sector will, of course, give the *total* response of the organization to the direct allocation of funds to this one particular sector. Symbolically, the total response or "multiplier" for sector j of the model is given by

$$M_j = \sum_{i=1}^{n} \alpha_{ij} \quad j = 1, 2, \ldots n,$$

where n = the number of sectors of the model. The multiplier always has a value of at least 1.000, since all funds allocated to a given sector must pass through that sector to be expended. For example, in the prototype model the Library (Sector 8) we have the multiplier

$$M_8 = 1.000.$$

This indicates that there are no personnel funds transferred from the Library sector. All personnel funds are expended directly to Library personnel only. On the other hand, the multiplier for Human Development-Continuing Education (Sector 33) is

$$M_{33} = 1.305,$$

indicating a relatively large response generated in various other sectors due to the internal transfer of this sector's allocated funds. The differential impact on the several sectors of the model can be determined by the individual interdependency coefficients which make up the multiplier. The multiplier M_{33} indicates that the funds allocated to Sector 33 generate 30.5% additional internal income to other sectors through transfers.

USES OF MODEL

The various ways in which the model may be used by administrators in higher education fall into the following three categories:

1. *Control Purposes*—From historical records various measures can be derived readily and employed as "standards of performance" for control of current operations;
2. *Impact Studies*—When a specific change of policy is contemplated, an impact study of the likely effect of the change on all related sectors may be estimated;
3. *Decision Making*—Courses of action involving complex shifts in policy may be simulated and their resultant impact determined both in terms of the direct effect upon each sector as well as the overall net effect of all changes on the system.

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THE ADAPTATION AND MAINTENANCE OF A NON-STANDARD ACADEMIC MODEL

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THE ADAPTATION OF AN ACADEMIC MODEL

The California State College, San Bernardino was opened in the Fall of 1965 under a standard three-three academic plan with a large lecture-small seminar format. This plan was an adaptation of Beardsley Ruml's work in, "Memo to a College Trustee." Ruml's concern was to balance large classes with small ones in order to raise the student-faculty ratio. His purpose was to meet financial constraints (a problem which sounds all too familiar today, twelve years later).

Howard Bowen and Gordon K. Douglass have recently reiterated this concept in a book entitled "Efficiency in Liberal Education." Their ideas were presented at the recent annual convention of The Association of American Colleges. Furthermore, the March/April 1971 issue of *Change* contains an editorial by George W. Bonham supporting The Ruml proposal, in which he asserts: ". . .no one has ever proved that a class of twenty, under most pedagogic circumstances, is better than a class of fifty, or that a teacher teaching fifteen hours a week is a poorer teacher than one who teaches half that time."

The original model adapted at San Bernardino provided for each student to take 36 courses in a four year program on the quarter system. Of these, he would attend 7 large lectures containing 150—250 students and averaging 192. The rest of his classes would have 5—20 students, averaging 16. Furthermore, while the students would spend approximately 20% of their time in large lectures, the faculty would so spend only 2% of their time. This would allow more time for independent and individual contact between students and faculty.

The Founders of the College also showed deep concern for general education, an interest prevalent in the fifties, which is also explicit in Ruml's work. This emphasis provides for a body of universally required courses, which can be used in turn to generate large lecture courses, the basic ingredient of the Ruml approach.

ADVANTAGES OF THE MODEL

Both financial and educational advantages accrue from the application of this model by manipulating the student-faculty ratio. It is quite obvious that the larger this ratio, the smaller the faculty cost per student. This model increases the ratio in two ways: first, by the use of the three-three plan and second, by the balancing of large and small class sizes. The three-three aspect of this model awards a student fifteen student credit hours (SCH), for three classes each meeting four hours per week, and gives a faculty member, twelve weighted teaching units, (WTU). These numbers, 15 SCH and 12 WTU represent full loads per quarter, consequently each hour of faculty time generates 1.25 student credit hours. The usual relationship (at least throughout the California State College System) is 1 for 1.

This aspect of the model is illustrated by assuming that the college has 1600 full time equivalent students and an average class size of 20. Under the three-three plan, this would require a faculty of 80 with a student-faculty ratio of 20. However, the conventional plan would require a faculty of 100 with a student-faculty ratio of 16. With a student-faculty ratio of 20, the conventional plan could have only 80 faculty but average class size would rise to 25 (See Figure 1).

The balancing of large and small class sizes, then is the contribution of the Ruml plan. Here the assumption is made that some formal educational experiences can be appropriately offered in large lecture halls, but that most should be in small seminars. The original Ruml plan proposed three basic types: large lectures, lecture-discussions, and seminar-tutorials, averaging 200, 75 and 10 respectively. The modified form provides for two basic class sizes, large and small. Figure 2 illustrates this approach with respect to both the conventional and the three-three plans using a student-faculty ratio of 20. In order to produce an average small class size of 16, about 40% of a student's time is spent in a large class on the conventional plan as opposed to only 20% in a slightly larger class on the three-three plan.

Three-Three College			Conventional College
1600	Number of Students		1600
15 Sch	Full Time Student		15 Sch
12 WTU	Full Time Faculty		12 WTU
5	Sch/Course Regis		3
4	WTU/Course		3
1.25	Sch/WTU		1.00
20	Stu/Fac	16	20
80	Number of Faculty	100	80
20	Aver Class Size	20	25

Figure 1

THE ROLE OF THE OFFICE OF INSTITUTIONAL RESEARCH

After four years of operation, some modifications of the model were made, first, because all courses did not fall into the two basic categories, and second, because there was

1600 STUDENTS 80 FACULTY 20 BTU/FAC

Conventional 5 Courses/Stu 4 Courses/Fac

No. Courses	Max. Size	Aver. Size	Regis.	% Regis	No. for Grad.
20	250	160	3800	40	24
200	20	16	4800	60	36
320			8000		60

Three-Three 3 Courses/Stu 3 Courses/Fac

No. Courses	Max. Size	Aver. Size	Regis.	% Regis.	No. for Grad.
5	250	192	960	20	7
235	20	16	3840	80	29
240			4800		36

Figure 2

RUML PLAN

a decline in the relative enrollments in large general education courses. Different course types were included in the model, for example, physical education, lecture-laboratory courses and music ensembles. A study group has met with reasonable regularity for the past eighteen months, in an effort to define the model mathematically and understand some of its characteristics by simulating various changes. The most recent computerized output of the model contains significantly more detail than earlier models. It is currently installed on a timesharing terminal in an interactive mode. that is, the user may change any entry in the matrix and observe the consequent effects. In addition, a modest simulated class size report is produced before each final registration. This allows for monitoring the scheduling process and guiding the adding and deleting of course offerings.

This simulation has also been used in discussions with faculty concerning alterations in class size or teaching formats. In particular, when the Governor's budget was announced, a simulation was run to determine class sizes necessary to meet this budget for the Fall of 1971. It is hoped that current negotiations in Sacramento will result in an admustment more favorable to the educational interests of the College. However, the College is able to adjust to the increased student-faculty ratio.

ADDITIONAL ADMINISTRATIVE CONCERNS

While the current President and other key administrators were Founders of the College and therefore present at the introduction of the model, many newer faculty and administrators have little current understanding or appreciation of it. For example, the College's initial emphasis on general education has declined in significance in two categories; the number of offerings and the size of enrollment in large lecture courses. Several years ago the Natural Sciences Division split its required offerings into major and non-major general education courses. The physical science course was split into chemistry and physics and the life science course became a biology course. The mathematics course has changed from small to large to medium within two years, with and without small discussion sections. Numerous other changes have occurred in the Social Science and the Humanities Divisions.

Two faculty groups have been discussing proposed changes in the General Education Program but, thus far, only a very minimal change is being considered. It is proposed that one large lecture course be deleted from the lower division and be replaced by a large lecture required course at the upper division. Attempts at this kind of change are met with resistance by departments.

Consequently, the additional requirement for larger class averages has been met by combining traditionally seminar-size classes into medium-size classes. These, of course, are usually introductory, major courses, and most departments are not favorably inclined toward this practice.

This model has been used for two additional purposes, to project new space needs and to allow for a reduction of teaching load. These items further attest to the importance of a full understanding of the model and its relationship to the life of the College.

THE FUTURE

While it is clear that there is a need for further clarification of the model to the College as a whole, there are also several new problems to be solved by administrative policy decisions.

1. The original design was accepted by the State as unique in the State College System, (which now numbers 19 campuses serving some 244,000 full and part-time students with approximately 14,000 faculty members). Currently, the College serves 2300 students with 119 faculty members. The College's staffing pattern is uniquely based upon a student-faculty ratio which has been negotiated each year. It began at a level below 14:1 and was to meet a final level of two more than the systemwide ratio for the years commencing in 1972—73. Since the systemwide ratio has been stable at a few tenths above 16, the expectation for the College was clear. However, the Governor's 1971—72 budget and subsequent financial pressures have dictated a new systemwide ratio of 18.25:1. It further appears that the systemwide staffing pattern will be changed to the San Bernardino approach. What is the College's ratio to be with respect to the systemwide ratio?
2. There is also concern for faculty utilization which suggests that on a systemwide basis no class will be allowed to fall below the following sizes: 10 for lower division classes, 7 for upper division, and 5 for graduate. In fact, this so-called 10, 7, 5 rule is ten years old, but a new one of 13, 10, 5 is being discussed. While these "rules" would affect the other colleges some because their staffing quotas are higher, the effects would be significant for the Ruml concept.
3. In addition to obtaining dollar savings with respect to faculty costs per student, the state is obtaining

dollar savings in its capital outlay programs. These savings are made by raising the utilization standards for classrooms and classroom-laboratories. These recently adopted standards represent a 55% increase over the previous standards. This approach allowed for significant cut backs in the building program. The use of a four contact-hour course usually means that a classroom is used for only four days per week. This represents a built in bias, which comes close to decreasing the standard by 20%, over a five or six-day week. Clearly this affects the College's building program.

4. Finally, there is concern for the sizes of departments or major programs. The College began with several hundred students and each department was responsible for some of the general education courses. As growth has occured several departments have not carried their share of this load and consequently, improved their student-faculty ratios. The original design allows for the use of the general education load to support new departments and major programs throughout the college. However, new systemwide reporting and auditing schemes run counter to this use of the model.

CONCLUSION

While the College has been successfully adopting a non-standard academic model which is a continuation of the three-three and Ruml plans, sufficient growth patterns and pressures have arisen to justify new steps in its maintenance. We have suggested some of these problem areas.

Of course, the importance of small seminar type classes needs further study. One often sees references to the lack of data supporting small classes, as in George W. Bonham's writing, mentioned earlier. In the recent book "The Confidence Crisis" by Paul L. Dressel, F. Craig Johnson and Philip M. Marcus, the following statement is made; "Actually, patterns of instruction are flexible and class size is a matter of personal prejudice rather than demonstrated effectiveness...." (page 225). They are discussing this idea not in the context of planning, but in that of current practice, hence, "The Confidence Crisis."

Bowen and Douglass extend the course types to include programmed independent study, mechanized independent study and tutorials, the first of which may involve up to 60 students.

Finally, the concept of general education is losing favor. Its basis has frequently been found in the "elitist" approach, which is no longer the orientation of the American higher educational system. Public colleges and universities, in particular, are committed to the total population. This does not imply the necessary demise of general education, but it may mean a thorough new understanding of its role and meaning.

REMARKS ON STRATEGIC AND TACTICAL RESOURCE POLICY FORMULATION

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RESOURCE POLICY FORMULATION

Academic policies set the stage for instructional activities. Quite independently, admissions policies formulated in consonance with public needs and the desired character of the university yield the overall student body, by discipline, mix and level, to participate in these academic programs. One of the tasks of the administration is to insure the coordination of academic and enrollment policies and to meet their demands on the resources of personnel, funds and facilities. Resource policy formulation is thus an essential component of overall university management. A basic ingredient in matching expectations with possibilities is the exploration of alternatives. Because of the complexity of operations and the variety in the mix of resources to carry out desired programs, the office of institutional research, providing backup materials for the decision makers, must have a strong data base and computer simulation techniques. It also must be well grounded in alternative forms of planning.

PLANNING OVERVIEW

One of the surprising facts of life in university organizations is the degree of approval which planning seems to have. Students are for it, the faculty is for it, and administrators today seem to talk of nothing else. The puzzling aspect of this is that most of the people who are for it seem to agree that planning often doesn't go well and that there are enormous obstacles in the way of effective planning. One might wonder why planning is not more effective in light of the general support which the concept seems to have. More specifically, if simulation tools are as useful as they are reported to be, why isn't there more evidence of heavy utilization?

The question raised here, of course, is a complex one which cannot be answered simply. It may be helpful, however, to make a few observations about the dual nature of the planning process and the administrative complications to which this duality leads. It is often felt acutely in offices of institutional research but shows itself as well in other parts of the organization.

It is well recognized by university planners that long-range planning to some degree conflicts with short-range and medium-range planning. The same resources, of course, could be used for any one of these and the efforts are, consequently, to some degree in competition. This competition is not fundamental and is not the kind of duality to which we have referred. Rather, the contest between substantive and tactical planning is more serious. Substantive planning involves coming to conclusions about new institutional goals and real means by which they can be achieved. Tactical planning, on the other hand, is more defensive in nature and often focuses upon the development of elaborate defensive arguments for present practices or present goals.

It would probably be fair to say that one of the traditional functions of institutional research has been to defend the status quo, to explain why the resource consumption pattern of the university has to be what it is, or to explain why a plan developed last year was completely sound and looks even better this year. Substantive planning imagines itself to be working with a clean slate while tactical planning is self-consciously aware of the commitments of the past and of the advantage of momentum.

ROLE OF THE DATA BASE AND PROCESS MODELS

Data relevant to resource policy formulation come from many sources and are of various types. The instructional process is fairly well characterized by the schedule of classes report which should be produced automatically in a registration process. Complementary data formulations are the induced course load matrix and the corresponding staffing matrix. However, potential changes in academic policy or enrollment policy have direct effects on resource policy, and the communication channels may not be fully operative. An informal "ear to the ground" is essential. Furthermore, there is a softer type of information related to faculty and student preferences that can provide insight of explanations or foresight invaluable to realistic resource policy formulation.

A university acquires the resources of faculty, funds and facilities to carry out its primary programs of instruction, research and service. This involves *estimation* of resource requirements and *allocation* of actual resources to management units (e.g., departments) which in turn *assign* them to certain program activities (e.g., teaching). The processes of estimation, allocation and assignment may be complex and may involve much data processing to yield realistic policies. Models seek to abstract the essence of these processes, and when computerized, provide for rapid exploration of alternatives. Models are "objective" and describe the model-maker's understanding in quantifiable terms. They may be complex and extensive, desdribing overall university calculation of resource requirements in great detail for short-range budgeting. Or they may be more circumscribed by addressing long-term requirements at an aggregated level, or specific component processes such as space requirements. The speed and flexibility with which the models can be used reflect the decision-maker's needs. Development of process

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models by an office of institutional research begs real questions relevent to the way a process is portrayed—an extension of the past or fresh intuition about the future—and the way models are to be used—as descriptive or normative. Tactically, both data and models can be used in resource policy formulation by advocates, adversaries or neutral parties.

STRATEGY AND TACTICS CONTRASTED

We might often hope that strategic or substantive planning, whether for long or short range purposes, would replace tactical or defensive planning in offices of institutional research. But, in fact, both kinds of planning probably should go on simultaneously. While there is certainly a tension between the two approaches, it is essential for people who are involved in substantive planning to be quite deeply experienced in the operation of the university. This is another way of saying that effective and realistic substantive planning can only come from offices that are quite well informed about the ongoing operations of the university and aware of the existence of legacies from the past. One must begin from where one is in order to reach a distant goal, not from where one wishes he were.

A perfectly satisfactory example of this point is the design and implementation of planning models in university organizations. Computer models, whether elaborate or simplistic, can be used effectively for both tactical and substantive planning. Hopefully these new tools will be used for both purposes and neither one will dominate or drive out the other. For tactical purposes a computer model such as RRPM-1 or its more complex relative, CAMPUS V, can be used as a smoke generating device. The smoke screen in this case could consist of pages of computer print-outs showing what everybody will be doing at all times on each day in 1985. If elaborate detail can be sold as evidence of thorough planning, or at least as more complete planning than that of one's opponents, a breathing spell may be won, and perhaps more.

If the terms substantive vs. tactical seem to weigh the discussion heavily in favor of substantive planning, let it be said that defensive or tactical planning is critically important to the preservation and even advancement of most institutions. A legislative suggestion that teaching faculty are underworked and should be speeded up in the next few years is not ordinarily accepted by most colleges and universities as an invitation to rearrange its present or future. It is not even received ordinarily as a useful suggestion deserving of thoughtful consideration. It is a threat and is usually taken to be a threat; *ergo*, tactical planning. Or one might imagine that the legislature would suggest to a growing but small university that institutions of the future will not need facilities. A tactical plan justifying in total detail the existing construction plans of the campus is often the result.

A POSITION FOR THE OFFICE OF INSTITUTIONAL RESEARCH

The inevitable tension between substantive and tactical planning exists because each of the two planning processors have different purposes. Tactical planning at its worst can become an elaborate and time-consuming fencing match with the legislature. Substantive planning that does not touch the real world but focuses upon lofty and unachievable university goals is of little use. It may be expecting too much of anyone to participate effectively in both planning processes, but a good office of institutional research will probably have to do just that. Confused planning comes about when planners are no longer aware of what is substantive and what is tactical.

The obtaining and distributing of university resources requires strategic and tactical decisions by top management. Its collaborating office of institutional research, therefore, must provide an array of feasible alternatives and consequences to aid in the formulation of both kinds of resource policy. The OIR owes to top management a professional "ear to the ground" throughout the campus. It must garner reliable data, must relate it to objectives and be sensitive to signals for new plans. It must use its techniques as instruments to undergird accepted policies as well as to propose new ones. This is a difficult role to play, yet hopefully it is feasible with the newer computer MIS and modeling techniques.

LEGITIMACY IN INSTITUTIONAL RESEARCH THROUGH FACULTY/ADMINISTRATIVE INVOLVEMENT

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The legitimacy topic should be discussed only within the proper social and historical perspective. University campuses in the United States are just recovering from several years of campus unrest which partially caused a negative attitude towards higher education by the community at large, state legislatures and higher education governing bodies. Inflation and the above negative attitude brought about a "tight funds" situation resulting in a harder look by controlling bodies at assessing needs and developing spending priorities. The above noted pressure should call for a better coordination of all campus resources, including students, faculty, and administration. But prior to coordination and cooperation between the aforementioned groups there must be mutual respect and full sharing in the formulation of policy. The IR officer, of course, is caught up in this dilemma of increased community pressure for tighter controls on campus and the cross-fire of student-faculty demands for involvement in university policy formation. Possibly the IR officer can legitimize his position on campus through his ability to marshall the students and faculty to the common cause of institutional research.

To legitimize his position, the IR officer can always (almost always) lay claim to having the knowledge of his job; data processing, models, and the skills of organizing, monitoring, evaluating and reporting. This may allow him a rationale for being included as a part of the academic community and, indeed, the average student or faculty member will not question the IR man on the professional knowledge required by his position.

The author realizes that added complications arise over to whom the IR officer reports and whether he is in a line or staff position. A staff position implies the "carrying of someone else's bags," usually the president's or academic vice president's, while the line responsibility usually infers responsibility both "up" and "down" the administrative hierarchy. The position will determine, in part, the freedom and maneuverability of the IR officer to function in a leadership role.

The IR officer can legitimize his role by possessing the knowledge as mentioned above or he may possess certain leadership skills which allow him to function more effectively in the university setting. Legitimizing the role of the IR officer may come through various leadership styles, of which four are listed below:

1. Legitimized by *example*. The IR officer can lead by demonstrating fairness and wise judgment in seeking objective information without the use of manipulation and information control.
2. Legitimize by *charisma*. Few IR officers possess a charismatic leadership style, however, this could possibly be developed through a high success quotient. The IR position would be legitimized by the stature of the IR man himself.
3. Legitmize by *productivity*. The IR officer must have palpable proof of productivity (visible to faculty) on important issues which have both short and long-term effects.
4. Legitimize through the Peter Principle. The IR officer may have been raised to his "highest level of incompetence" which in some cases legitimizes the IR officer's position because he then threatens no one and can therefore be tolerated by more powerful, though insecure, officials.

As an end result, the IR officer, like all mankind, only wants to survive with respect from his peers and support by his superiors in the academic community (assuming he is a part of the academic community). How does the IR officer do this? One technique is to understand how change evolves and therefore, involve faculty and students in the data collection process. That means if the IR officer makes recommendations, he must allow students and faculty to be involved and, above all, show that the input has had some effect as demonstrated by having student-faculty ideas and concepts placed in the IR recommendations. One has to agree that involvement in institutional change increases immensely the probability of behavioral change in the students and faculty. However, involvement itself if not sufficient as there must be proof of influence and impact. In fact, the IR officer may have to point out to the students and faculty where their ideas and thoughts were incorporated in the data collection process in order to initiate and develop a mutual respect.

Following are a few tips for the IR officer on how to survive and still have the respect of the students and faculty:

1. Delegate—don't allow another's growth to go unnoticed and don't encumber a person's development because he may look better than the IR officer. Be sure to give credit to students and faculty for their impact.
2. Collect data of various types—qualitative and quantitative; affective and cognitive; and from many sources—departments, colleges, etc. should have the opportunity to provide data to the IR office.
3. Have knowledge and expertise in both the people area and technical institutional research area.
4. Know formal and informal sources of power and influence:
   a. Have knowledge of how the hierarchy operates and how to negotiate through it in the decision-making process.
   b. Know the results of effective (getting job done) and efficient (getting job done with people liking it) leadership.

In conclusion, the reader may ask why the IR officer is important to students and faculty. The answer is plainly that the IR officer is the source of data upon which policy decisions are made. It is obviously within the vested interest

of the students and faculty to be included in the decision as to what data to collect and the resultant policy-making process or to attempt to *control* the total process through other means.

One can be sure that the challenges for the IR officer are many and complex. The students and faculty wish only recognition that their contributions are not only heard, but used in the IR process. To this end students, faculty and administration must work cooperatively in the data collecting process to conduct the affairs of a university.

EXTERNAL DETERMINANTS OF ADMINISTRATIVE POLICY FORMULATION FOR COMMUNITY COLLEGES

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INTRODUCTION

It is fairly easy to support the thesis that administrative policies must follow from and be shaped by the educational policies, which are determined in large measure by internal forces (or will be, if present trends toward student and faculty participation in policy making continue). Because administration is often equated with operations in the community colleges, administrative policy making has had a pitifully weak research base. One might also argue that the administration of the community colleges is too complex for research because of the unusually intricate state and local partnership which characterizes them in most areas of policy formulation. The intricacy of this relationship is compounded by the changing nature of the administration and control of the community colleges in many states, particularly their ties to the "common" schools, vocational-technical schools, four-year institutions, and the coordinating agency for all of higher education.

Community colleges which are still under the jurisdiction of State Departments of Education are probably more free of serious external determinants of policy making than those under other kinds of administrative arrangements, largely because departments with responsibility for grades K through 14 have so little time for community colleges. States in which community colleges are totally supported by the state, with their own state boards, are likely to have the least amount of freedom, unless local control has been achieved to a high degree before the advent of the state board and/or total state funding.

The California Community Colleges are somewhere in the middle of the two extremes now, about three years after their separation from the State Department of Education and their theoretical take-over by their own state board. Since community college districts receive a majority of their funding from local taxes, local control still tends to dominate in areas where state-level determinations are not strictly mandated, e.g., in requirements for teaching and other credentials. Two prospects are quite certain, however, with respect to the role of external determinants of policy making in the administrative arena. First, the relationship between state and local determinants will be changing for some years to come, probably in the direction of stronger state determinants. Second, research and management information will play an ever more important role in policy formulation.

TYPES OF EXTERNAL DETERMINANTS

The four major types of external determinants of policy formulation by local community college boards and administrators are the following:

1. Legislation (primarily state) which either directs, permits, or prohibits local districts and colleges with respect to the adoption of particular policies. In California, for example, public schools and colleges may not perform any function not authorized by the state statues.
2. Policies and regulations of the governing board for community colleges at the state level, which have the effect of interpreting and/or implementing the statutes. Such determinants of local policy formulation tend to fall in the areas of academic standards, educational programs, faculty and staff qualifications, attendance accounting, building utilization standards, and calendars.
3. Policies adopted by professional organizations of community college faculty members, students, counselors and other student personnel workers, boards of trustees, and other sub-populations of the community colleges. Such groups attempt to influence the determination of policy at both the legislative and board levels, in matters of general concern and of particular interest to the groups.
4. Consensus positions of less formal groups of peers or colleagues from the community colleges who attempt to influence policy formulation, e.g., presidents and local trustees whose collective influence upon state policy may be strong (both positive and negative).

Still other groups whose actions and attitudes often serve as external determinants of local decision-making include:

1. State agencies with non-educational functions, e.g., finance, architecture, personnel and/or credentials, and purchasing;
2. State coordinating agencies for higher education (which, incidentally, have to date had less influence on locally supported community colleges than on other institutions of higher education);
3. Taxpayers;
4. Other citizen groups with both fiscal and societal interests;
5. The federal government, through both legislation and categorical aid;
6. Special interest groups whose membership may include technicians who are trained by community colleges, e.g., law enforcement officials, health workers, and social welfare aides;
7. Other segments of higher education, individual institutions to which students transfer and/or who prepare faculty and staff for community colleges.

MAJOR AREAS OF POLICY FORMULATION SUBJECT TO EXTERNAL DETERMINANTS

A short but inclusive list is suggested which includes areas beyond the realm of administrative policy:

1. What are the functions and overall mission of the community colleges?
2. Who should be admitted? to what kinds of programs? under what conditions and subject to what restrictions?
3. What kinds of educational programs are appropriate?
4. What are the appropriate grading and retention standards?
5. What qualifications should be established for faculty and staff?
6. What kinds of facilities are needed to house the programs and services?
7. How is it all to be financed? state vs. local vs. student fees?

Areas 1, 6 and 7 are quite clearly administrative in nature, although the first is obviously in the area of educational policy as well.

CURRENTLY RESEARCHABLE QUESTIONS FOR POLICY DETERMINATION

1. What is the prevailing practice or tradition in the area?
2. How well is it working?
3. How much does it cost? What variation in cost exists among the colleges?
4. What do people in the colleges think about it?
5. What effect would certain proposed changes have?
6. What would the proposed changes cost?
7. How acceptable would the changes be to the various constituencies?

PRESENT STATUS OF RESEARCH IN ADMINISTRATIVE POLICY FORMULATION

The information-research base for administrative policy formulation for the community colleges is extremely weak at present, in large part because of the absence of good management data. Definitions, bases for awarding state aid, attendance accounting methods, standards, and reporting forms have all been handed down to the community colleges by the dominant public school system in most states, with little adaptation to the special needs of community colleges as higher education. University taxonomies clearly do not fit community college needs. Therefore, two-year colleges have tended to "make do" with unsatisfactory definitions, concepts, and reporting forms designed for secondary schools, at least until such time as they can get some better agreement concerning their unique needs and characteristics.

Separating "management information" from "institutional research" for the moment, one might say quite facetiously that the dominant research technique for administrative policy formulation at the present time resembles some kind of curve fitting (or perhaps least squares) technique. Specifically, the "research" effort is directed toward consensus policy formulation which will arouse the least amount of hostility from the various constituencies of the affected instituions. At its best, the technique is one of gaining consensus in areas where data alone do not provide clear and objective bases for decision-making about alternatives. At its worst, the technique might be described as a convening of those elements of the power structure which consitute the external determinants, for the purpose of hammering out what often turns out to be an unpopular policy to be imposed upon the institutions concerned.

More seriously, institutional research techniques which are generally available to the community colleges, and which are likely to be used with increasing frequency as the research competency of community colleges grows, are the following:

1. Management information systems, which are not strictly "research" techniques but which go far to determine what kinds of investigations will be carried on;
2. Survey research: by far the most prevalent technique now and likely to be perpetuated as the most acceptable and easy to apply. The "who does what" and "how do they like it" questions will insure the continued use of survey research methods;
3. Program budgeting, cost effectiveness techniques, educational accountability programs: policy formulation will surely depend increasingly on these techniques which are still too new to the community colleges, particularly as fiscal resources from the state and local community become more scarce;
4. Modeling techniques: more sophisticated than can be put to use by most community college policy makers with present knowhow, but an extremely important approach to problem solving in the areas of both finance and campus planning;
5. Experimentation: community colleges may yet move from the unsophisticated approach of asking simply "What would happen if . . ." to planned experimentation involving not only educational programs and instructional techniques, but also the allocation of special funds, staffing formulas, room and class scheduling, and other administrative operations;
6. Consensus techniques: methodologies are available for obtaining consensus in policy areas which do not lend themselves to experimentation and where simply survey techniques are inadequate. The Delphi technique is being used in many situations calling for planning and forecasting in higher education. With the present press for accountability, the philosophical assumptions of the community colleges about their mission will of necessity be examined under a spotlight, sharpened, and certainly questioned by the fiscally conservative and others who may have had doubts about universal higher education all along.

CURRENT TRENDS IN COMMUNITY COLLEGE RESEARCH FOR POLICY FORMULATION

Community colleges are slowly coming away from policy formulation based on such unsophisticated but necessary questions as the following. Who is doing what in this area? What do the colleges think about it? How well do they think they are doing. And, at the local level, Will the change produce more, less, or the same amount of funding from state sources? Is change even possible? The trend may be away from negotiation and crude consensus techniques in areas where research is possible toward the systematic development of data related to alternatives which are themselves associated with program goals and objectives.

A management information system appears to be a certainty for community colleges, in part because of the efforts of the Western Interstate Commission for Higher Education. The WICHE undertaking has indeed hastened the day when community colleges would become MIS-oriented although problems of definition and outcomes which are almost unique to the community colleges are yet to be resolved by either WICHE or the National Center for Educational Statistics.

Program budgeting as a decision-making tool will probably be accepted by community colleges as almost a matter of routine before all taxonomies are agreed upon, before all data elements are developed. Initial resistance based on fear is being overcome; the usefulness of the technique is becoming apparent to even the most tradition-oriented academic administrator.

Modeling techniques are needed and may yet be the third trend for the community colleges in response to the need for better bases for policy formulation in relation to the flow of students into the colleges, the development of new campuses, and the flow of dollars in planning the extension of educational opportunity for all.

AN ILLUSTRATION OF A MAJOR PROBLEM AREA

For California and perhaps for a majority of the states, a major area in which improved policy formulation is needed is the planning and development of additional community college campuses in multicampus districts and in areas not now served by colleges at all. The Carnegie Commission, the Project Access staff of the College Entrance Examination Board, and other groups have suggested strongly the need for vastly increased numbers of community colleges in the coming decade in order to bring about full opportunity for post-secondary education. The California problem is not one of unwillingness by the local districts to develop new campuses but, instead, a disagreement over the guidelines and procedures for approving such campuses. In 1969 the Coordinating Council for Higher Education was encouraged to extend its function of surveying the need for State College and University campuses and recommending new campuses to the legislature, into the community college sphere. It was deemed that Council recommendation would be required as a condition for the state's contributing to the funding of new campuses, for both land acquisition and the construction of facilities. New campuses, are normally anticipated in annually updated ten-year plans for facilities which are submitted to the state-level Office of the Chancellor for Community Colleges for approval. In 1969 proposals for new campuses were included in a study performed by the Coordinating Council, which also received recommendations from the Board of Governors for the Community Colleges and testimony from the local college districts about their perceived needs.

Despite the application of a considerable amount of staff expertise in all quarters, the process of decision-making about new campuses turned into a subjective exchange of opinions between what might be termed the external (state coordinating unit) determinants and the internal (local college) forces. Factors in the recommendations of the Coordinating Council were, in the view of the colleges concerned, arbitrary. Three major factors (or external determinants) in the policies governing additional campuses were:

1. Campus size: The Coordinating Council set a masterplanning figure of 10,000 "day-graded" students which a community college campus should reach before receiving approval for an additional campus.
2. Accessibility: A commuting time of 30 miles or 45 minutes each way to the campus was established by the Coordinating Council as a reasonable distance to commute, almost exclusively by private car since no college acknowledged adequate public transportation to its existing campuses.
3. Utilization standards: New standards for room utilization were applied to the assessment of need for new campuses, based on the hours 8 A.M. to 10 P.M., with an additional projection made for summer session increased utilization.

Thus the external determinants of local decision making about the addition of new campuses tended to be arbitrary i.e., lacking in a good research base. Subsequent to the 1969 study, attempts have been made to develop modeling techniques as a frame of reference for decision-making about new campuses, which will take into account both private and social benefits, economies of scale, and, perhaps most important of all, alternatives to the addition of complete, comprehensive colleges in multi-unit districts. The test of the usefulness of good research as opposed to lobbying and argumentation will come in 1972, at least in the area of decision-making about the addition of community college campuses.

CONCLUSION

An attempt has been made to demonstrate the existence of powerful forces external to the locally controlled community colleges, which determine to a considerable extent the realm within which such colleges can operate if they are to any considerable extent dependent upon external funding. Such forces are not necessarily negative influences. They may in fact help insure standards. economies, and equalization among widely differing areas of the state.

At the same time, the shortcomings of the present situation were pointed out—the absence of an adequate data base; the utilization of confrontation, rather than consensus-devising techniques; and the present weak research base for decision-making at all levels. Attention was called to promising techniques for achieving consensus (the Delphi technique, for example), modeling, and achieving accountability by program budgeting and other fiscal devices. The community colleges tend to lag behind other segments of higher education in adopting a research approach to problem solving and policy determination, in part because of the complexity of the organism. However, tools are becoming available, attitudes are changing about the need for such tools, and capabilities are increasing in the community colleges.

ADMINISTRATIVE POLICY FORMULATION FOR COMMUNITY COLLEGES: INTERNAL DETERMINANTS

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The administration of the community college and the governing board must determine the philosophical commitment of the institution. Questions to be asked include:

1. Who is to be served?
    a. Educational background of the clientele
    b. Profile
2. How are these individuals to be provided educational opportunity?
    a. Methodology and teaching techniques
    b. Special laboratories—audio-tutorial

The governing board, under the leadership of the chief administrator, must formulate objectives and goals by surveying the constituency served, by adhering to the purposes for which the institution was founded, and by assuming the role or institutional image the college desires to fulfill.

The philosophical commitment is determined by the chief administrator and governing board members who have a conceptual image of what the community college should be and the clientele it should serve. After a great deal of discussion and interaction, the goals and purposes are determined and stated.

After the role of the institution has been established, the chief administrator and the governing board must establish policy pertaining to the faculty. I am defining faculty as: instructors, service personnel (counselors, placement and financial aid officers, admissions and records people), and administrators (divisional directors and deans).

Paradoxically, the formulation of policy stating the qualifications of staff members must be determined prior to engaging the services of staff members; therefore, the involvement of the faculty in formulation of this policy must grow progressively as members of staff are hired. Policy pertaining to the staff must be evolutionary and change as the institution grows and as faculty becomes involved in policy making.

A faculty handbook can be prepared prior to hiring staff members, but if the faculty is not engaged in administrative policy formulation, policy will not be understood and implemented. The policy that an instructor must have a master's degree and three years of teaching experience, preferably in a community college, can be formulated by the governing board and the chief executive officer—this policy will not change much, but the emphasis placed on counseling, which may necessitate a ratio of counselors to students, must be stated as a goal of the institution and the most effectual ratio must evolve as the institution is fulfilling its philosophical commitment.

How does institutional research assist with the selection of the faculty? The president, his designee, or the personnel director must identify potential faculty members who have an instructional commitment which is compatible to the philosophical commitment of the institution. If emphasis is on teaching a diverse, heterogeneous student body with varying degrees of past educational achievement and the instructor wishes to work with a select group of highly motivated students—something has to give. Policies will evolve in all areas; instructional, student services and administrative.

Institutional research plays a vital role in determining the numbers of students to be served, the profile of these students, and the curriculum to be offered, including the occupational programs. This will include the programs, length of each, and desired behavioral changes (skills and knowledge); thus enabling students to be successfully employed upon completion of the program he has selected to fulfill his educational and occupational goals.

Obtaining demographic data which will establish a profile of the student body and which will determine the curricula is a complex task. Sources of data relating to students are parents, high school staff and faculty, and the *potential students* themselves, including recent high school graduates, employed workers, the unemployed and the underemployed.

Certain types of statistical data will be more readily available from high school sources than from any other. They may include:

1. Quantitative data on the numbers leaving high school, both with diplomas and without;
2. Other enrollment statistics and projections;
3. Data on programs entered by graduates in previous years, perhaps at neighboring community colleges;
4. Various statistics (both actual and projected) on where the high school graduates are entering higher education, including total percentage seeking higher education, percentage to four-year colleges, to two-year colleges, to career programs, to university parallel programs, and the total percentage who attend the local community college;
5. Actual and projected data on the scholastic ability of students;
6. Statistics on the non-college bound, including questions relating to why they are not planning to attend post-secondary education, quantitative information, and questions relating to socio-economic factors that may be involved;
7. Identification of specific occupational programs needed and possibly priority ratings.

If the institution has a definite commitment to occupational education, the institutional research director, faculty, and governing board must be certain that occupational programs will fulfill students' interests and demands and manpower needs. Implementing occupational programs is high risk at best; therefore, the board, administration, and staff cannot "fly by the seat of their pants." Numerous

examples can be cited to illustrate that implementation of occupational programs without data can result in a fiasco. Expenditure of large sums for facilities and equipment have been made to set up programs for which no enrollment ensued. Students have completed occupational programs and have been unable to find jobs. Policy concerning number, content, and ultimate objectives of occupational programs must be well documented.

Courses which make up the transfer curricula are somewhat determined by the baccalaureate degree-granting institutions to which the student transfer. However, administrative policy must be established pertaining to articulation of the curricula. Must the community college make all the adjustments or is this a problem in which both institutions cooperate?

The students must play a vital role in policy formulation. Students must serve on curriculum committees, student activity committees, commencement and graduation committees. The community college cannot be composed of individual groups of administrators, instructors, students. The community college must be a community of learning from which policy evolves and is implemented on a continuum if the institution is to be dynamic.

We can be sure of one thing—change. Change comes about through involvement of the talent of all to be served and by those serving in a student-centered institution. Institutional research is the means for successfully planning of the goals and purposes of the unique institution—the community college.

ENROLLMENT POLICY FORMULATION

THE IMPACT OF THE CITY UNIVERSITY OF NEW YORK OPEN ADMISSIONS POLICY ON THE BOROUGH OF MANHATTAN COMMUNITY COLLEGE: A STUDY IN EVALUATIVE RESEARCH

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In spring 1970, the City University of New York (CUNY) announced its decision to institute in the fall of that year its policy of opening its doors to any New York City high school graduate. This compressed into six or seven months the five years originally allotted to the several units of CUNY system to prepare for a massive influx of new students. This collapse in timing compounded the problem of meeting the educational challenge posed by the new student body. Any realistic evaluation of the CUNY experience must identify and explore the interactions of these factors.

The impact of the dramatically enlarged freshman class in the fall 1970 semester, and the response to it varied from college to college. The main thrust was borne by the community colleges, both in the number and quality of open admissions students received. To a significant extent, the success or failure of open admissions at CUNY rests on the ability of the community colleges to enable this new student constituency to become educationally viable. In this regard, the role and policies of CUNY central administration take on a new importance.

A first approximation of the effect of the open admissions policy may be derived from the Borough of Manhattan Community College (BMCC) experience. BMCC is centrally located in the heart of skycraper New York. Over one-third of its students live in Manhattan, a majority in economically and educationally disadvantaged areas; the remaining two-thirds commute from the boroughs of Bronx, Brooklyn and Queens in almost equal numbers. Many of these students also live in poverty areas, thus giving a wide representative character to the open admissions freshman class at BMCC.

In fall 1970, 1653 new freshmen enrolled in the day session. This was 90% above the fall 1969 admissions level of 877 and three and a half times the total number of students enrolled at the opening of the college six years ago in September 1964. This number also exceeded total day session enrollment for the first three years of the school's existence.

The college faced far more than the logistic difficulties of accommodating a numerical upsurge in student population. The self-direction imposed on the open admissions entrant by CUNY administration policy channeled those with weaker formal academic credentials into the community colleges. Educationally, the qualitative challenge was, perhaps, even more drastic than the quantitative.

The institutional impact on BMCC was traumatic. During this period, close to 40 new classroom teachers were hired. Instant new classroom space had to be found. At fall opening, the student body was spread over four facilities, in four different locations, one of which was removed about 20 city blocks from the other centers.

New educational and administrative behavior was forced upon the college. An intensive remediation, tutorial and counseling program was developed. The Office of the Dean of the College was enlarged to provide a deanship for remediation, buttressed by a number of coordinators. Class contact hours were extended in English Composition, mathematics and modern languages to permit remediation within subject areas. All fall 1970 entry students were limited to 12 or 13 credit hour programs. Grading policies were revised to permit the student earning a D or F to convert his grade into a W or no penalty grade. A special, one month remediation program was conducted during the summer of 1970 for those open admissions entrants who seemed in greatest need of help in college preparation.

To what avail was this expenditure of time, money and effort? How can we gauge the ability of the college to meet the educational challenge posed by the new student body? How do we measure progress in academic competence, particularly, of those students with disadvantaged educational backgrounds? Can we provide any insight into the question of the validity and feasibility of the CUNY open enrollment program under the conditions of its introduction and the political, economic, and educational environment in which it must operate?

Obviously, informed intelligence is required to begin even to approximate answers to these questions. But what kind of research is needed? The complexity and fluidity of the open admissions activities invite a multi-variate flexible and experimental approach. Courage in the face of the data generated may also be needed.

At BMCC, research was designed to cast light on three key, interacting areas: (1) the educational challenge posed by the open admissions student body (2) the institutional response to this challenge and (3) the measurement of student learning.

Research methodology employed under each of these aspects and a review of the data developed to date will be discussed in the balance of this paper.

THE OPEN ADMISSIONS STUDENTS

Since the fall 1967 semester, entering freshmen students at BMCC have filled out an informational report form which supplements their academic records with personal, socio-economic data. In fall 1970, the open admissions entrants completed the identical questionnaires; over 96% of these survey forms were returned. These data made possible comparisons with previous entry classes and helped to identify the distinguishing characteristics of the open admissions student.

What does this research indicate?

A. Personal Characteristics

1. *Age.* The open enrollment entrant was, on average, about one year older (19.8 years) than his predecessor in fall 1968 (average age 18.9 years). The student residing in officially designated poverty areas was older still; 20.1 years of age.
2. *Veteran Status.* There were four times as many veterans (15.1%) in 1970 as in 1968 (3.7%).
3. *Birthplace.* One fourth of the open enrollees were born outside of the 50 states. The percentage was higher among poverty area residents, amounting to 3 out of 10 students (29.3%). In comparison with earlier classes, fewer were born in Puerto Rico but more came from the West Indies, Central and South America.
4. *Mobility.* One fourth of the fall 1970 entrants changed their residence within the past two years, a 10.2 percentage point rise over the fall 1968 movings.
5. *Ethnic Origin.* Two-fifths (39.3%) of all 1970 incoming freshmen were Black, one-fifth (20.6%) were of Puerto Rican or other Spanish origin, the remaining two-fifths (40.1%) were of "other" origin, mainly white, with 3% or 4% Orientals in this group.

B. Academic Characteristics

1. *Time Span Between High School Graduation and College Entrance.* The open admissions student was out of high school an average of 1¼ years before entering college, three-fourths of a year longer than his predecessors. In fall 1968, over 90% of the entrants came directly from high school: in fall 1970, this percentage had fallen to 70%. Three out of 10 (28.9%) open admission students were not in school before coming to BMCC: 18% were working; most of the rest were either looking for work or in the armed services. Less than two-thirds of the males (62.5%) and three-fourths of the females (76.9%) were in high school.
2. *Standing in High School Graduating Class.* There was a pronounced slippage in high school standing from the mid-deciles to the bottom 8th, 9th and 10th deciles.
3. *High School Averages.* The high school averages of the 1970 open admissions entrants were 5.5 percentage points below the 1968 level. Twenty-one percent entered with high school averages below 70%. This is the *minimum estimate* of students who would not have been admitted under former admissions criteria. The slippage in averages was greater among males than females and among nonpoverty area residents than poverty area residents.
4. *Average SAT Scores.* Average verbal SAT scores (375) for those open admissions students who took these examinations dropped 46 points below the fall 1968 scores; average mathematics scores (396) were off 44 points during this period.
5. *Curriculum Choices.* Open admissions tended to reverse the trend away from transfer programs which had become evident in the past few years. About one-half of the students were in transfer programs, a little over a third in business careers and one-sixth in the health service career programs. There was also a 3 to 4% decline in the number of open enrollees planning careers in their current programs.

C. Socio-Economic Characteristics

1. *Household Income.* The real income of the 1970 open enrollment entry student household was about 20% lower than his counterpart of two years earlier. Fourteen percent of the households had income below $3000 a year; two-thirds of all household incomes were below $8000 compared to 33% in this category in the ACE national sample. At the upper end of the scale, 18.5% of the BMCC student households earned $10,000 a year or over in contrast to the 51.5% in the national sample.
2. *Poverty Area Residence.* Over half (57%) of all open admissions students lived in officially designated poverty areas, a 10% increase over the fall 1968 percentage.
3. *Work Plans While Studying at BMCC.* Two out of 3 (64%) open enrollees will have to work while in college and three times as many (22%) because they have to support themselves as in fall 1968 (8%).

D. Family Characteristics

1. *Most Common Language Spoken at Home.* In one-fourth of the open enrollment homes (26.6%) English was not the most common language spoken at home. In 20% Spanish was the most common language.
2. *Father's Occupation.* Most of the fathers of the open admissions students were skilled workers (37.2%) but this was a decline from 45.9% in fall 1968. Unemployment was greater than two years earlier as was the number of retired and deceased.
3. *Fathers' Highest Formal Education.* Half of all the fathers of the fall 1970 entrants had some high school training. Over one-third of the BMCC fathers completed their formal training with grammar school, twice the national proportion; only 12% had college or postgraduate schooling against 31% in the national sample.
4. *Mother's Occupation.* Most mothers of the open admissions students were housewives (56%); this represented an 11 point increase over the fall 1968 level, reflecting, perhaps, withdrawal from the labor market in the face of unemployment. Office workers formed the next largest occupational category.
5. *Mothers' Highest Formal Education.* Three out of five BMCC mothers had high school education. BMCC mothers with college training (8%) were one-third the level of the mothers in the national sample (24%).

MEASURING THE ACADEMIC PRODUCT

In gauging the academic experience of the open admissions student, we should be on the alert against double standards of bookkeeping. These standards must be equally applicable to previous classes of students or earlier college behavior. Failure to do so would vitiate the research and beg the question whether open admissions students could really perform in what has come to be accepted as "college level."

The "normal" measurements of GPA (Grade Point Averages) and subject grades have become increasingly suspect and unrealistic. Comparability of GPA is further limited for the current open enrollment student because of the special grading policy instituted. In view of these circumstances, it is no surprise that the fall 1970 entrant achieved an index of 2.82 (on a scale of 4) towering above the 2.24 index of his earlier counterpart in 1968. Under these conditions, withdrawal rates take on added significance as self-evaluation on the part of students.

About one-fourth of open admissions entry students either withdrew from the college by the end of the first semester (18.0%) or withdrew from two or more courses (5.8%). It is a far inference that this represents a minimum percentage of students encountering academic difficulty. Total withdrawals ran 75% above the 1968 rate. Poverty area residents had lower drop out rates (16.2%) than average but withdrew from more courses (6.9% withdrawal from two or more courses).

The fall 1970 entry student had been block-programmed for three major subjects for a maximum of 12 or 13 credits. At semester's end, the average number of credits carried was 10.2, indicating an average withdrawal from one course.

With open admissions policy, the task of designing and implementing research applicable to the learning process becomes more pressing. In this research, the primary interest must be centered on how the student is enabled to master his subject matter. At BMCC, a number of experiments have been undertaken.

1. Questionnaires designed to evaluate the teaching process by eliciting responses on the transactions within the classroom have been distributed to all students in the tutorial program. Questions included 18 different classroom attributes, including the teacher "explains subject matter clearly," "follows a logical sequence in teaching," "brings in illustrations beyond the textbook," "solicits questions," "returns marked test papers," "gives homework," "checks and reviews homework," "encourages class discussion," etc. Questionnaires were completed on those teachers who gave the highest as well as those who gave the lowest grades. The responses yielded an interesting profile of the teacher behavior in the open enrollment classroom and displayed variation in the attitude towards and assessment of the "easy" vs. the "hard" markers.
2. A classroom experiment has been designed to test the effectiveness of the use of audio-visual material. This experiment was worked out with an instructor in American Government who teaches four sections of the same courses, two of which meet in the day and the other two in the evening. Since his course content lends itself to discrete segments, one half of the students (one evening and one day course) will be exposed to audio-visual instruction only and the other half will continue to receive instruction by the lecture method. All sections will be given identical tests on the segments before and after the instruction. These groups will be varied as the segments of the course change. Similar testing has been designed for the entire Nursing Department.
3. Several departments (particularly Mathematics) are experimenting with original testing programs designed to trace the mastery of the data elements of their subjects at the beginning, during and at the end of the semester.
4. Analysis of counseling effectiveness has also been designed. The Department of Student Life will identify those incoming fall 1971 freshmen who are in greatest need of counseling services. Half will receive intensive counseling, the other half will act as a control group. The academic achievement of these two groups will be compared at the end of the semester.

THE INSTITUTIONAL RESPONSE

Within the college, the new admissions program generated a flurry of position papers, meetings, new committees and reports, mainly on an administrative level. Although modifications emerged, no basic change occurred in the administrative, organizational or educational structure. The ability of the institution to respond is decisively affected by the budget, physical space, student allocation and other central administrative logistic constraints under which the organism must operate. To a significant degree, the constraints of time as well as of timing influenced the ability of the school to react and prepare. The open enrollment policy was announced in late spring, prior to the summer recess, forcing the institution to be prepared by the fall semester opening. In the main, the response has been one of reacting to rather than controlling events.

A number of the major institutional responses at BMCC were outlined above. This paper will conclude with a brief review of these responses and the methodology used in evaluating them.

1. The remediation and tutorial program had a mixed success. Questionnaires were distributed in late November 1970 to all tutors and tutees participating in this program, eliciting information on the materials available and the physical surroundings in which the tutoring occurred. In addition, tutees were asked to answer questions on the actual tutoring process and tutors were asked to supply data on the participation of the classroom teacher, departmental and remediation coordinators in the tutoring process. The results of the survey indicated the need for closer association between the class-

room teacher and the tutor for more effective reinforcement of learning in the classroom. They also pointed to the need for more careful recruitment of tutors and enhancing the quality of their instruction.

2. Research drew on three sources in studying the special 1970 summer remediation program: first, a comparison of the academic background and the GPA's, selected subject grades and withdrawal rates of participants and a matched sample of non-participants in this pre-registration program; second, questionnaires were filled out by both sample groups at the end of the first semester and third, all students, teachers and counselors involved in the summer program submitted written evaluations at the conclusion of the program. This analysis indicated that while those who did not participate in the summer program achieved a higher average GPA during their first semester, their rate of withdrawal was two and a half times the average participant withdrawal rate. The program was hampered by insufficient funds and the constriction of time, particularly in regard to the hiring and orientation of tutors. The most positive effect of the program was in aiding the participating students in "adjusting" to college.
3. The main educational burden fell upon the several academic departments. The various efforts in searching for a viable educational approach to the new student needs remained isolated, without central direction or even inter-communication among the disciplines. This lack of coordination limited the effectiveness of the academic response.
4. The flow of reports from the several departments indicated serious concern but little evidence of the impact of college policy on the teaching staff. In the main, the teacher was left to his own devices to educate the open enrollment student as well as he could in terms of his own commitment and qualities. If the success of the new policy depends, in the last analysis, on the learning that goes on in the classroom, then the recruitment, orientation, training and evaluation of the instructor becomes crucial. There has been limited examination of organizational practices in this area.

The first steps in evaluative research have thus been taken at BMCC. Administrative awareness of this need and the support for research on the college's ability to provide a viable education for the open admissions student is encouraging. Many crucial areas of institutional behavior, however, require far closer scrutiny. Among these may be included (1) the base for decision-making; an examination of the incestuous nature of the membership on key administrative and academic committees (2) measuring the influence of local campus policies and politics (3) the re-examination and re-evaluation of academic standards and criteria.

How can we summarize the BMCC experience to date? Confronted with the reality of the mass presence of the open admissions students, BMCC, like other units in the CUNY system, had to act, prepared or not, to absorb the influx. Both students and institutions managed to survive and not without grace in the face of not inconsiderable difficulties. It is trivial to say that final judgment on the process cannot as yet be rendered. It may very well turn out to be that the social benefits from this experiment will far outweigh any individual educational benefits. It is, however, indicative of the seriousness with which BMCC is attempting to meet this challenge by its decision to introduce evaluative research at the earliest stages. The uses of the research findings will determine the degree of seriousness. The institutional behavior patterns have been essentially cautions, partly because of uncertainty inherent in a new, evolving condition in which immeidate action is required with what can be charitably described as incomplete preparation, and partly because of the limited control over some of the key factors in the situation, such as budget, space limitations and student allocation. The changes which have occurred were as much the result of necessity as of reasoning.

There is a natural reluctance for institutions to re-examine and challenge their own behavior. In a real sense, CUNY and BMCC may be attempting to meet a dynamic educational challenge with outmoded and rigid reflexes.

THE FUTURE OF A UNIVERSITY: THE ROLE OF INSTITUTIONAL RESEARCH

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A major university makes plans for the future that require it to reflect current societal needs and to maintain old traditions. The challenge of universal higher education is apparent. The issue is how best to maintain academic excellence while developing diversified, pluralistic universities. The activity of considering this issue was undertaken at Michigan State University through a Commission on Admissions and Student Body Composition appointed by President Clifton R. Wharton, Jr. in Spring, 1970. The Commission was charged with reviewing current admissions policies and their effects as determinants of the present student mix. Based on this analysis, the Commission is to recommend to the President and Board of Trustees policies concerning admissions and student body composition.

The 25 member Commission was broadly representative, reflecting a cross-section of faculty, students, and alumni, and containing five public members from outside the university community. Support personnel included an advisory and technical staff which functioned as staff specialists to the Commission.

From the beginning, those conducting the review of the admissions policy and student body composition at MSU required assistance in data collection, analysis, and evaluation. In addition they sought and received guidance in formulating and crystallizing the issues and problem areas and in the entire process of developing the means to analyze the current status of the university, to recognize where its strengths lay and to suggest the direction of effort that the Commission might undertake. In order to focus on key problem areas, the Commission formed five subcommittees: the Mission of the University; Enrollment Mix; Special Programs; High Risk, Minority, and Disadvantaged Students; and Admissions Procedures and Standards.

It is not the writer's intent to imply that he was a major contributor to this activity, nor even OIR's major contributor although he was a staff specialist assigned to the Commission. Neither is it the intent to convey a full report of the problems, deliberations, and final outcomes of the Commission. It is improper to suggest outcomes since the Commission has not at this point finished its final drafting of the Commission report. Rather it is the writer's intent to point to some of the issues raised, to suggest how they were approached, to mention what data were assembled and further, to suggest that as a result of the Commission's efforts and recommendations much was learned about certain data base problems which might not have been fully recognized without the Commission.

The issues dealt with by the Commission would fill several pages, but essentially they came down to the very basic issue which affected its considerations and needs for data: whether the university should shape its admissions policies to fit and maintain its present role, programs, strengths, and capabilities; or whether new admissions policies were necessary which would by their very nature reshape the university, its role, programs and strengths.

The following questions are illustrative of the issues to which the Commission addressed itself. What should be the composition of the student body? What should be the proportion of undergraduates to graduates? What should be the proportion of men to women? What should be the proportion of upper division to lower division students? What about transfers at the junior-senior level? What should be the total enrollment of the university? What proportion of each entering class should be "high risk" students? What should be the university's stand toward special groups of students such as veterans or minority students?

Institutional Research, in its activities with the Commission, dealt with and operated to help formulate the issues. It was a key force in data identification, data collection, data analysis and interpretation, design of studies, carrying out of new studies, and performing literature search and identification. In addition the office representatives served in an advisory role to subcommittees and to the Commission's director, were involved in Commission hearings and proceedings, and actively participated in drafting recommendations and in drafting the final report.

The issues or problem considerations were focused in the five subcommittees. The enrollment mix subcommittee needed and received a great quantity of date relative to enrollment trends, patterns, and mixes within the university, within the state, and within the nation. They were a focal point of all other subcommittees' considerations since mix would be determined in large part by the other committee recommendations. In every case the past trends of mix were extrapolated into the future and modifications to mix were considered for possible affects on finances, programs, students, faculty resources, and role and mission of the university. For example, what would be the impact of a greater female student mix upon programs such as engineering and the sciences? Would it hasten the move to already overburdened social science and humanities areas within the university?

The Admissions Procedures and Standards Subcommittee reviewed the university's policies in selection, placement, and recruitment. What was the track record in recruiting minorities, graduate students, and the academically superior student? Obviously, standard measures such as test scores and GPA, would be sufficient to identify students that might be classified "high risk," but would there be other evidence that would support having more "high risk" entrants to the university? Tied to this admissions consideration were the other subcommittee efforts devoted more directly to high-risk students, minorities, and open admissions.

One of the many material benefits of this subcommittee's efforts was the development of a series of definitions which delineated as clearly as possible that being part of a minority was not automatically synonymous with economic and educational deprivation. That distinction points to a differential approach to the numerous possible categories such as "normal" admission, economically disadvantaged but educationally normal, educationally disadvantaged but economically normal, minorities, and obvious overlaps in all these categories. Procedures for recruitment and the development of special support programs at the university are tied to a recognition that the words "minority," "high risk," "educationally disadvantaged," and "economically disadvantaged" are not synonymous terms.

The subcommittee on Mission of the University had a difficult task since it involved both a quantitative element and, more often than not, a subjective appraisal of the university's academic goals, strengths and weaknesses, and its role within the state and higher education. A key element of this activity was the drawing together of materials which reviewed the pattern of university programs relative to other institutional offerings in the state. Another important element was previous self-study documentation that pointed to the university's mission through its stated and observed activities. Much valuable input was derived from the hearings held by the Commission which, as part of those hearings, gave the faculty and students of the university an opportunity to address all aspects of the Commission's deliberations. Institutional Research provided extensive information to this subcommittee based on IR's previous experience in numerous university-wide, self-study and evaluation efforts.

The Special Programs Subcommittee considered many special operations of the university which included but were not limited to: merit scholars, honors programs, residential colleges, high risk students, and continuing education (adult education). Many of these special programs might require enlargement if student mix and/or mission were modified. Essential to their operations was a review of these programs to ascertain strengths and problems and to suggest future directions for them.

Although fairly obvious, it is worth citing that any number of subcommittees might have been established. In any case there would be a necessary recognition that there was an interdependence and comprehensiveness to the venture. A decision reached in one subcommittee could have important impact on another subcomittee's decision reached independently.

For the questions raised by these subcommittees there was a need for available and pertinent data which reflected past and present university directions and emphasis. The data collected, organized, and presented to the Commission consisted of data retrieved from the major data systems already producing university data. Basic university data essentially consisted of data developed by the registrar, admissions, evaluation services, financial aids, the business office, and institutional research. Institutional Research's original data essentially focused on workload data for departments, faculty workload, and cost data related to educating the students; past, present, and future. Much data came out of the Registrar's Office with regard to enrollment trends, student mix, source of students, and the potential enrollment pool of available students within the state. These data were presented to the Commission in a series of reports covering the data of the last ten to fifteen years. Coupled with this were observations concerning the potential impact of any recommended shifts in enrollment mix.

Admissions procedures and activities were assembled and presented to the Commission to reflect the current use of test scores, GPA, and other criteria for selection. Financial aids information covered the types of aid and amounts of funding already provided students. An extrapolation of this information was undertaken to suggest the support costs which would be needed if the university expanded its admissions to more educationally and economically deprived students.

Special data were assembled and developed from a wide range of documents, citations, excerpts from journals, monographs, newspapers, and books which had some bearing on admissions, changing roles and missions of higher education, and the issues related to open admissions.

Special studies included a longitudinal review of students in the university classified as high risk, merit scholars, and regular students to see what the experiences, rates of attrition, and trends derived from this comparison. If the university were to expand any special student group, it ought to know what had been the record of experiences developed thus far.

Financial aids review focused attention on recipients, their characteristics, amounts received, and sources of support. Financial aids was one of the several areas in which serious data system deficiencies came to light in this study.

Costing out the proposals and recommendations by the Commission required a special study which tried to reflect in a very a simple matrix the potential costs of adding 100 students to the university. Many Commission recommendations would not imply an additional cost or even any cost at all.

Data systems drawn upon for Commission needs substantially met the demands placed on them because of the efforts of personnel in Institutional Research and other related offices who, because of their experience, could extract the best from those systems. It is doubtful that any data system or management information system can be wholly and quickly responsive to every conceivable question; however, there is a need to move more toward integrated systems rather than operationally separate systems. These latter systems are more concerned with and developed for external or special needs rather than for purposes of evaluation and self-study. Evaluation requires comparable data over time and ease of cross-organizational development of data pertinent to a common evaluation problem. Something as simply as common codes, common groupings of data, and the very existence of data in one location would be a positive move.

Regardless of specific recommendations made by the Commission, data collected on students will have to be far more extensive than it is now. Built into the Commission outcomes is an effort to discern subtle distinctions among

students which would allow placing the student in various categories for variations in aid, support programs, and resultant evaluation activities.

Priority implications will manifest themselves in the recommdnations so that review and reduction of some existing programs will be required in order to allow for expanding certain efforts and possibly adding new ones.

The coordination of financial aids and support services will be required if they are to function in the context of the Commission's recommendations. Program review of all offices and departments working with the disadvantaged will also be required if their efforts are to be more closely coordinated and costly overlap avoided.

Institutional Research as an office or as a process of investigation lies comewhere along a continuum of data collectors to program evaluators. The Commission activity pointed very clearly to a role of policy involvement closer to program evaluators than to data collectors. It is very clear that data collectors will not become evaluators or policy influencers unless they help determine the type of questions asked as well as respond to questions. It can be argued that the organizing of data can influence policy development but certainly not to the same degree as the data collected, organized, and analyzed which responds to a question or issue which one helped formulate.

The process of providing data useful to the Commission was enhanced by some already existing data systems that routinely generated data. However, the presentation of the data suggested a role for Institutional Research that is a hallmark of its activity at MSU. That essential ingredient was expertise in the role of higher education specialists as well as data collectors and statisticians. The makeup and backgrounds of the staff, coupled with its previous experiences with the broad self-study activities at MSU and at other institutions of higher education, allowed an input that otherwise would not have been available. Without belaboring the point, there was exemplified in the Commission process an obvious policy role by OIR as a result of its personnel, previous involvements, and acknowledged expertise in fields of higher education which, when coupled with an appropriate opportunity such as that provided by the Commission, reflects institutional research at its very best—involved, knowledgeable, data collector and evaluator.

ENTRANCE CHARACTERISTICS AND THEIR RELATIONSHIP TO TYPES OF STUDENT DROPOUTS

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The main purpose of this investigation was to relate causes of dropping out of two universities[1] to a wide range of characteristics of both the students and the institutions involved. Thus the underlying orientation of the research follows a "congruence model" which views attrition as a function of the "fit" between the needs, interests and abilities of the student and the demands, rewards and constraints of particular settings.

The student characteristics that were examined in a portion of the investigation are at a number of different levels, from demographic characteristics and socio-cultural levels of the home, to individual interests, values and personality dimensions. The main variables were:

1. Continuity-discontinuity between home and university environment
   a. Demographic characteristics suggesting continuity-discontinuity with intellectual-cultural presses of the college—e.g., rural-urban background; size of community; social class background (occupation, income, education of parents).
   b. Intellectual and cultural family and community background—e.g., cultural interests of parents; college attendance of other family members; proportion of high school class going to college.

2. Openness to new experience
   a. Boundedness openness of life goals—e.g., degree of certainty about vocational decisions.
   b. Venturesomeness; orientation toward new experience (curiosity about the new and different).
   c. Awareness of self: intraceptiveness.
   d. Expressiveness vs. inhibition, control.
   e. Flexibility, nonauthoritarianism.
   f. Cognitive styles; complexity, thinking introversion, creativity.

3. Skills and competences
   a. Academic capacity and achievement—as obtained by the Admissions Office (College Boards, High School grades).
   b. History of commitments in pre-college years—in high school activities, individually selected interests, group memberships.
   c. Self-concepts—assessment of own capacities.

4. Other predispositional variables relevant to outcomes
   a. Values, interests, attitudes—especially those that are in some degree general, pervasive, or dominant, involving some degree of commitment—e.g., intellectual, social, aesthetic and religious values; orientations toward politics, national and international issues.
   b. Orientations toward college—e.g., goals for college, such as vocational, social, intellectual, "identity-seeking;" orientations toward academic demands, including academic achievement motivation, internal-external motivation.

A copy of the instrument used to collect the above data at the University of Michigan and the followup questionnaires sent to dropouts at Michigan and Washington are part of a final research report to the U.S. Office of Education and of course cannot be illustrated in the space available here.[2]

PROCEDURES

It should be pointed out that while this article covers two followup studies of dropouts these data are not comparable in all respects. Only types of dropouts were categorized in the same manner. That is no entrance information was available for the University of Washington students and no information from continuing students at the University of Michigan was gathered. In addition, the University of Michigan study had a total of 1400 subjects while the University of Washington study included only 330.

DATA GATHERING: THE STUDENT CHARACTERISTICS

As a first phase of the study, extensive entrance data were collected during pre-freshman orientation on two complete classes (N=4150) entering the College of Literature, Science and the Arts at the University of Michigan (classes 1966 and 1967)[3]. These data consisted of written responses to a specially prepared questionnaire as well as responses to the Omnibus Personality Inventory. In the fall of 1965 additional data were collected by a followup survey from the students who had withdrawn from these entering classes. The purpose of the followup survey was to determine why the students dropped out and to assess the nature of the students' problems while in attendance. Returns, after two followup letters, were received from 79.8 percent of this dropout sample (N=1131). There were fewer returns proportionately from students who had obtained lower grade point averages; otherwise the characteristics of the respondents and nonrespondents were the same.[4] 745 persisting students were used as a "control" group for comparison on entrance characteristics.

DATA: THE ENVIRONMENT

Certain distinguishing features obtained from the CCI, EAT, and CUES about the University of Michigan were used to identify the environmental presses. Aside from being a large university, the salient environmental presses appear to be (1) *intellectual:* an academic emphasis on the abstract and theoretical; (2) *reflective:* there is active inquiry of value systems and ethics; (3) *academically competitive:* there is a substantial emphasis on high achievement; and (4) *esthetic:* there appears to be a lot of interest in the fine and performing arts. Furthermore, there seems to be at least one characteristic that is anti-press, while at the same time being a press. This is the *permissive nature* of the campus environment as evidenced, for example, by low faculty press for compliance, large numbers of students off campus in apartments and fraternities, little social and academic conformity expected among students, and the large, presumably impersonal, classes for underclassmen.

RESULTS COMPARING ENTRANCE CHARACTERISTICS WITH PRESSES: PHASE ONE

During this first stage of the investigation we were also concerned with analyzing the data in relation to a stage of human development.

SOCIAL PRESS

Male and female students were found to vary considerably in their dropout or stay-in behavior relative to most of the social presses. Students of both sexes from the smaller communities appeared to have difficulties at the University. Otherwise, politically liberal males, and those with strong religious beliefs, were found to drop out. Among females it was found that the less wealthy, less esthetically inclined and less attractive were more often found among the dropouts.

Regarding the social presses, then, these data suggest that where the University tends to have relatively unique presses, the corresponding social-psychological attributes of students differentiate between persisters and dropouts. Also these presses differentiate between males and females in ways that appear to reflect differences in role expectations that may in turn be related to the socialization process.

ACADEMIC PRESS

The academic presses were also shown to differentiate between persisters and dropouts. In this case, however, it was not anticipated that male and female roles would be related to the academic presses since the intellectual (course related) demands are probably similar for both sexes.

The scores of the verbal and mathematics sections of the Scholastic Aptitude Test did differentiate between persisters and dropouts; higher scoring students tended to persist as expected. The notable feature seemed to be the greater mean SAT-V score difference between female dropouts and persisters.

At least two of the OPI scales (RL and ES) seem to measure what have been broadly defined as social presses. These scales indicated that more religious males and less esthetically inclined females tended to withdraw. Of the remaining scales three seem to be more closely related to intellectual orientations: Complexity (CO), Theoretical Orientation (TO) and Thinking Introversion (TI).

SUMMARY

During phase one there seemed to be support in our data for the importance of institutional presses. Also demonstrated was the sex-differentiated significance of these presses. The sex-differentiated results suggest that certain aspects of the interaction with the environment are more or less crucial depending upon one's sex.

Our data also supported the presumption that the presses were of two broad categories (social and academic) and that students might be incongruent with either or both of these major environmental presses. Not clearly supported by these results is the notion that certain cognitive styles are significant in a student's intellectual adaptation to academic presses.

The next phase of the study was undertaken to refine our insights by looking into the many causes of dropping out.

TYPES OF DROPOUTS: PHASE TWO

The University of Michigan follow-up questionnaire was designed to determine the reasons for withdrawal and to distinguish among the students by "type of dropout." Each respondent responded to scaled problem dimension statements which were factor analyzed. The reasons given for dropping out along with the responses to the problem statements allowed us to type the dropout. We then compared the two major types of dropouts (academic and social) with a sample of persisting students on their demographic and socio-psychological characteristics at entrance to see how they differed.

THE ACADEMIC DROPOUTS (W_a)

The largest group of respondents within the withdrawal sample consisted of students who were having academic difficulties. These students left because of academic failure or because of fear of academic failure.

THE SOCIAL DROPOUTS (W_s)

The students leaving for reasons that were clearly social typically expressed themselves in these ways:

> It was very different from my high school where I knew everyone. It's bigness and cold attitude was disheartening and disappointing to me, although my grades were satisfactory.

> I felt lost among the multitudes, never really fitting in or finding satisfactory friendship among students or faculty. I also had difficulty concentrating on studies

because of my depression. I didn't think it worthwhile to continue with this attitude and state of mind. I also at the time had no goal.

THE OTHER WITHDRAWAL SUBGROUPS

Two additional withdrawal subgroups were identified by responses to problem area statements. A religious group was identified by high scores on two scales: (1) a feeling that my religious beliefs were constantly being challenged and threatened; (2) a questioning of my own religious faith or beliefs.

A final subgroup, identified as the "intellective-cosmopolitans" were students who left the University because they found the "intellectual and social climate stifling," "not intellectually challenging" and so on. These students, while expressing concerns that indicate incompatibility with the environment, appeared to be polar opposites to the social and academic dropouts.

SUMMARY

Table 1 shows the numbers in each of the groups discussed above. The findings of our analysis are illustrated in Table 2 which interrelates the two major types of dropouts with sex.[5]

Table 2 summarizes the characteristics of men and women of the two major dropout groups.

A survey instrument similar to the followup questionnaire used for University of Michigan withdrawals was sent to a sample of University of Washington withdrawals and persisters. The purpose was to test the Michigan typology on students at a different (though similar) institution and at a later time (1962 and 1963 vs. 1968 freshmen).

In the absence of information on entrance characteristics we decided to compare responses to a set of questions on problems encountered while at the University. Comparisons were made between types of withdrawals as well as with persisters. Certain items were common to the Michigan questionnaire.

The basic questions we hoped the study would answer were:

1. Does the typology developed at the University of Michigan translate to the University of Washington across a span of five to six years or is it necessary to expand the typology to accommodate new withdrawal phenomena?
2. Are there important differences in perception of problems encountered at the University not only between types of withdrawals but also between persisters and withdrawals?

Assignment to groups within the withdrawal typology had to be made on the basis of responses to an open-ended question: "If you are no longer at the University of Washington please give your reason or reasons for leaving." All assignments were subjected to two independent referees and conflicts were later resolved in conference between them.

TABLE 1
Number of Withdrawals by Subsample and Sex
University of Michigan

Subgroup	N	M	F
Social	87	30	57
Academic	245	130	115
Social-Academic	67	38	29
Intellective-Cosmopolitan	25	10	15
Religious	67	28	39
Not in any group*	217	88	129

*No clear reason for dropping out.

TABLE 2
Withdrawal Types

Academic	Social
Men:	
Low Sense of Competence and Self Esteem	Low Sense of Competence and Self Esteem
Low Social and Friendship Expectations	High Social and Friendship Expectations
Highly Concerned About Ade- in School and Work	Concerned About Adequacy in School and Work
Unconcerned About Adequacy in Social Relationships	Concerned About Adequacy in Social Relationships
Goal of Vocational Preparation	Low Emphasis on Vocational Preparation
Low Esthetic Orientation	Low Emphasis on Intellectual Preparation
	High Impulse Expression
Women:	
Low Social and Friendship Expectations	High Social and Friendship Expectations
Somewhat Less Attractive	Much Less Attractive
Described as: Social, Free, Open, Happy, Active, Warm	Described as: Solitary, Constrained, Closed, Unhappy, Quiet, Cold
Conservative Religious Views	Liberal Religious Views
Goal of Vocational Preparation	Goal of Vocational Preparation
	Prefers Reflective Thought

It proved not to be necessary to revise or to expand the typology developed in the University of Michigan study. Typing the dropout sample proved essential in order to see the effective differences in problems encountered at the University between persisters and the various types of dropouts. If dropouts are treated as a single group their perception of problems at the University is largely indistinguishable from the perception of the persisters. A further partitioning on sex revealed differences in the perception of problems closely related to the stated reason for withdrawal.

It was possible to compare responses to specific items common to the Michigan followup survey and to the Washington survey. On those common items which could be classified as clearly self-critical the mean levels of concern expressed by all withdrawals in the two samples was nearly the same. On those common items more nearly environment-critical, the University of Washington withdrawals were more critical.

SUMMARY AND IMPLICATIONS

Some of the findings illustrated by these data have indicated factors associated with dropping out for *both* men and women, and for the different types of dropouts. Some of the findings have shown *differential* relationship as well.

SEX ROLES

In general, objective data on men and women have shown similar relationships. Thus, for both men and women dropping out was found to be related to (1) lower scores on tests of academic competence, (2) less family income, and (3) student origins in the smaller communities and high schools.

However, it was in the attitudinal and value dimensions where more differences were found. And these differences were found to be consistent with the culturally defined roles of men and women in our society.

Consequently, we find that one of the major implications of this research is to stress the importance in future institutional research of taking into consideration sex roles, particularly as they are related to attitudinal and value orientations.

TYPES OF DROPOUTS

It should not be assumed that the typology used in this study is either specific enough or exhaustive. The possibility of partitioning the types developed here into subtypes must be admitted. Social dropouts, by our definition, may actually enjoy quite diverse political, social and economic backgrounds and may have different perceptions of themselves in relation to the University. Academic dropouts are more easily defined but, as we found, the academic problems are seldom present alone.

The University of Washington survey demonstrates again that a rational division of the withdrawal group is necessary to the understanding of problem areas lost in the averaging of extremes for the unpartitioned group. One would be hard pressed either on the basis of socio-psychological theory or by weight of numbers to defend graduation after four years at a single institution as the norm.

Responses from dropouts suggest that there can be positive aspects to withdrawal, and hence negative aspects to persistence. The demonstrated value of recognizing diversity among dropouts leads us to suggest the need to develop a parallel typology for persisters.

ENTRANCE CHARACTERISTICS

While differences or entrance characteristics were found that seem to be related to male and female sex roles according to the dropout types, we did not find the differences to be striking enough to justify the construction of indices which might be used to predict the likelihood of a particular person becoming a particular type of dropout. Thus we feel that our findings on entrance characteristics should be regarded as an exploratory sketch rather than a definitive analysis.

The theoretical framework for future studies of these developmental tasks is still primitive, but we feel the kinds of data to be gathered are found in the range of questions already available in this and related investigations.

CONCLUSION AND POLICY IMPLICATION

Research on students has increased substantially over the past decade. Jacob's survey which concluded by saying that the college had minimal impact on the students was undoubtedly a major stimulus. The Learned and Wood, Newcomb, Chickering, Katz, and Vassar studies have provided benchmarks as well as some integration of our expanding knowledge.

The major policy implication for administration is to suggest that the problems of research in admissions, guidance, instruction, and so on are so complicated that we will not be able to solve them for a long time, or come to the conditions for optimal individual development. In the meantime, students will make false starts and find it necessary to change directions. Therefore, any system of higher education must remain reasonably diversified, non-punitive, open and flexible while the human spirit remains complex, mobile, inconstant, volatile and ... happily ... defiant of easy classification and systematization.

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[1] The Universities of Michigan and Washington.

[2] Robert G. Cope *et al.*, "An Investigation of Entrance Characteristics Related to Types of College Dropouts." Final report on Grant No. OEG-9-70-0033(057) to the U.S. Office of Education, May, 1971.

[3] Collected in 1962 and 1963 from two freshman classes in the College of Literature, Science and the Arts as part of a longitudinal study conducted at the Institute for Social Research by Professors Gerald Gurin and Theodore Newcomb.

[4] Only 50.3 percent of the sample from the University of Washington responded in 1970-71.

[5] The religious dropouts and the intellective-cosmopolitan types are discussed more completely in the final report mentioned earlier.

PROJECTING FRESHMAN ENROLLMENT IN SPECIFIC ACADEMIC DEPARTMENTS

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Enrollment projection models derive from the earliest budgetary processes used at colleges and universities. Implicitly, if not explicitly, the development of a budget involved some estimate of enrollment during the budgetary year. Typically the projection models were designed to estimate an institution's total enrollment,[1] and for many years this estimate was considered adequate for the planning and budgetary cycles. More recently, however, with the application of the Planning, Programming, and Budgeting System (PPBS) to higher education, with the development of simulation models, and with the recognition of cost differentials associated with different programs offered within the institution, more detailed enrollment projections are required. In addition, as planning is decentralized to lower level units, such as schools or academic departments, decentralized enrollment projections are necessary to determine faculty loads, staffing requirements, space allocations, etc.

This paper, therefore, examines alternative enrollment projection models designed to predict enrollment in specific institutional categories or departments. Enrollments in specific departments vary from year to year and the proportional variation in departments may be greater and in a different direction than the variation in total institutional enrollment. For these reasons the results of departmental projections at a selected institution are compared with two models using only historical data and two models sensitized to current developments as indicated by the expressed major choices of prospective freshmen.

Wasik[2] classified enrollment projection models into three categories: (1) extrapolation models that use cohort data to develop straight line extrapolations or linear regression equations to estimate enrollment; (2) structural flow models that use differential equations to estimate the flow of individuals through the system; and (3) Markov chain models that use a transition matrix to estimate the movement of students through or between different departments. In this paper we explain and test two simple extrapolation models, a structural flow model based on current information of the expressed major choices of prospective freshmen, and a Markov transition model that combines current information on major choice with the probability of enrollment in other departments.

PROCEDURE

Since pre-enrollment data routinely collected by The American College Testing Program (ACT) were used as the projection data and since the results of the projections were compared to actual enrollment, it was important to pick a college where freshmen typically select a major and where incoming students are required to take the ACT battery. Kansas State University (KSU) satisfied these requirements and was selected after officials there expressed a desire to participate in such a study.[3]

The ACT Class Profile Service maintains files for each institution for both enrolled and non-enrolled students. The major areas on the ACT Test Battery were classified according to KSU departments and the ACT information was then merged with the KSU information. Actual freshman figures by department were obtained for a five-year period, beginning in the fall of 1966. Using these two data sets where appropriate, we projected enrollments using the models described below and observed their relative efficacy as summarized in the Results section.

Baseline Model

This model assumes that changes in enrollment occur only as a function of overall institutional growth, i.e., that the ratio of departmental enrollment to total enrollment is constant across time for each department.

Trend Line Model

In this model, prediction is based on regression analysis of the trends in department enrollment figures over a period of years. If the enrollment in a department has stabilized, we predict that there will be no change in enrollment for the coming year in that department. If enrollment has steadily increased or decreased, we predict that the trend will continue. No provision is made in this model to adjust for abrupt changes that may occur in the individual department.

Simple Ratio Model

The focus in this model is on the choice of educational major which the prospective students express when taking the ACT battery during the year or two preceding enrollment. Research has indicated that students tend to major in the area they chose prior to college entrance.[4] The ratio for the preceding year of the number of prospective students expressing a particular choice of major to the number of enrolled students actually entering that major is considered to be the ratio that would hold for the coming year. Therefore, if the number of students sending their ACT scores to the college and expressing a particular choice of major increases or decreases in comparison to the number expressing that choice of major the preceding year, the prediction will be that the number of enrolled students actually majoring in that area will increase or decrease proportionately over the present year.

Markov Model

The use of Markov models for certain kinds of population size estimation has been summarized by Wasik.[5] The basic idea is to allow for different rates of enrollment for various intended educational majors and subsequently to modify estimates according to the tendency of students to switch to other, possibly closely related, departments. The latter modification is accomplished by means of a *transition matrix*.

Each row of the transition matrix represents an existing state of the system (namely intended educational major); the columns represent outcomes (the department in which the student actually enrolls). The entries in any row are proportions which total to unity, reflecting the fact that each student who enrolls must select some department. Both rates of enrollment and the transition matrix entries are established by historical data; these quantities are assumed to be relatively stable over time.

Discriminant Analysis

The technique of discriminant analysis has enjoyed widespread application in the behavioral sciences; some important examples have been cited by Cooley and Lohnes.[6] Our current interest was to compute discriminant functions based upon interests and abilities which maximize the separation between enrolled and non-enrolled students. This discriminant function would then provide an enrollment probability for each student. Thus, this approach could be used to improve either the simple ratio model or the Markov model by weighting each intended educational major by the probability of enrollment for that student.

RESULTS

Table 1 indicates the relative effectiveness of the various techniques. For each department the actual enrollment percentage and the percentage deviation of the projection from the actual percentage for each technique are given. Summary statistics include projected total enrollment, mean squared error, mean absolute error, and the number of departments in which the more complex methods perform better than the baseline.

Because each model projected a different total enrollment, we compared the models on the basis of their predicted percentage distribution within each department, thereby affording a common denominator for comparing the models. (Although projected total enrollment for each model is provided in the table, the focus of our analysis is on the relative effectiveness of the models at the departmental level.)

Results indicate that in the case of this particular institution, more complex projection models do not improve prediction. We note that the best projection model is a simple average of the baseline and trend line expected percentages. However, the baseline by itself performs almost as well. The simple ratio approach yields the worst results since the prediction is so bad in certain categories, notably in the undecided category and in home economics. Using the Markov model, we do much better than with simple ratios, but not as well as with the baseline or trend line. However, for five out of ten institutional categories, the Markov approach is superior to the baseline.

Table 2 explains more fully the relationships implicit in the Markov model. The extreme-left column contains the enrollment probabilities as determined from the matched records; note that agriculture and home economics students are more likely to enroll than students who intend to major in business. The remainder of Table 2 exhibits the transition matrix of probabilities for those who enrolled. Thus, of those who intended to major in agriculture, 86% did so whereas the other 14% switched to other areas. Note that the main diagonal elements dominate (are larger than) the other elements in that row; this corroborates the findings of Lutz.[7]

As discussed above, we had planned to use discriminant analysis to improve enrollment prediction. However, this approach was not fruitful. Inspection of the data revealed that the separation between variable means was not large in relation to the standard deviations of the variables considered; hence this approach was not warranted. Table 3 reveals only small differences between enrollees and non-enrollees except for the college choice variable. Also, we continued to detect only small differences after completing separate analyses by department.

CONCLUSIONS AND DISCUSSION

Four major hypotheses are implied by the results of this exploratory study at one institution:

1. The student characteristics explored in this study will not differentiate enrolled from non-enrolled students adequately enough to appreciably improve enrollment projection accuracy.
2. Although a majority of students major in the curricular areas they choose as juniors and seniors in high school, preliminary choice of major does not appear to be particularly useful in making departmental enrollment projections.
3. Different models do a better job for different departments.
4. Simple and straightforward projection models would appear to be just as useful as complex and sophisticated models.

Concerning thses hypotheses, certain cautions should be pointed out. First, the study is based on only one institution, a medium-size state university. In addition, a number of institutions will find such a model unimportant because most students do *not* enroll in a particular major until after the freshman year.

A second problem is that the present study investgated only a few variables. It is possible that the inclusion of other types of variables such as interest inventory scores, personality variables, motivational variables, etc., would improve prediction markedly. On the other hand, pessimism might be warranted if we consider the lack of success obtained in the multitude of studies through the years which have tried to predict college dropout. It should also be mentioned, however, that this lack of prediction success has not curtailed the investigation of dropout prediction.

TABLE 1

Relative Effectiveness of Each Model Expressed as Percent Deviation from Percent Actually Enrolled

Department	Percent Enrolled	Models				
		Baseline	Trend Line	Simple Ratio	Markov	Combined Baseline and Trend Line
1. Agriculture	10.99%	.79%	.66%	1.57%	1.38%	.73%
2. Architecture	4.70	1.07	.30	1.23	1.22	.69
3. Traditional Liberal Arts	14.20	-2.29	-1.53	-2.67	-2.01	-1.90
4. Education	11.57	.72	-.02	-.18	.44	.35
5. Health Related Fields	7.94	1.38	1.09	.43	.81	1.24
6. Other Pre-professional Fields	3.17	-.72	-1.00	-.60	-.60	-.86
7. Undecided or General	17.34	.93	2.89	5.82	1.84	1.91
8. Business	7.97	-.80	-.97	-.46	-.35	-.88
9. Engineering	10.86	.13	-.64	-.64	.14	-.25
10. Home Economics	11.21	-1.21	-.75	-4.39	-2.87	-.98
Total Projected Enrollment		3,084	2,857	2,914	3,084	—
Mean Squared Error*		1.29	1.53	6.54	1.74	1.24
Mean Absolute Error*		1.00	.99	1.80	1.16	.98
Number of Departments in which more complex technique was better than baseline		—	6	4	5	6

*Mean squared error is the average of the squared differences between the expected enrollment percentage and the actual enrollment. Mean absolute error is the average of the differences taken without regard to sign. Thus, mean squared error tends to accentuate the seriousness of the largest discrepancies.

Another problem with this study is that no attempt was made to adjust for exogenous variables that obtained at KSU. For example, it is possible that arbitrary enrollment limits existed for certain departments. Similarly, other departments may have been so popular that full enrollment was virtually guaranteed. Knowledge of such constraints would provide a basis for making adjustments to the prediction models and it is assumed that any institutional application of these models would be adjusted appropriately for similarly identifiable variables.

The present study has explored only a few of the many possible methods for forecasting freshman enrollment in curricular departments. One intriguing possibility which has not been explored (and which is meant to stimulate thinking) is a more advanced ratio model than the one investigated in the present study. It seems probable that a student's image of the college, as well as his knowledge about himself and the world of work, is a determining factor in not only whether the student enrolls but the department in which he majors. Experience with the College and University Environment

TABLE 2

Enrollment Probabilities and Transition Matrix* of Probabilities for Enrollees

Enrollment Probability As Determined by Match	Indicated Preference	Actual Enrollment Category									
		1	2	3	4	5	6	7	8	9	10
1. .33	Agriculture	.86	.00	.02	.01	.00	.01	.04	.04	.02	.00
2. .24	Architecture	.05	.73	.05	.00	.00	.00	.12	.00	.05	.00
3. .23	Traditional Liberal Arts	.05	.02	.43	.10	.04	.02	.25	.03	.03	.03
4. .23	Education	.01	.01	.07	.57	.03	.02	.18	.05	.00	.06
5. .26	Health Related Fields	.16	.00	.05	.04	.61	.00	.10	.02	.00	.02
6. .20	Other Pre-professional Fields	.02	.00	.20	.02	.02	.42	.18	.07	.02	.05
7. .23	Undecided or General	.07	.04	.11	.07	.03	.01	.44	.07	.10	.06
8. .19	Business	.02	.00	.10	.05	.00	.04	.21	.51	.03	.04
9. .27	Engineering	.04	.15	.04	.01	.01	.02	.09	.04	.60	.00
10. .41	Home Economics	.01	.01	.02	.03	.01	.00	.30	.01	.00	.61

*First obtain the proportion say, a_i, in each indicated preference category after allowing for probability of enrollment. Let p_{ij} denote the entry in the $_i$th row and the $_j$th column of the transition matrix. Then the expected proportion in, say, category k will be given by the basic stochastic relation: $q_k = \sum_i a_i p_{ik}$.

TABLE 3

Mean Differences and Standard Deviations for Enrollees vs Non-Enrolles

Variables	Absolute Value of Mean Difference	S.D.
1. High School GPA	0.17	0.7
2. ACT English	1.0	4.4
3. ACT Math	1.7	6.5
4. ACT Social Science	1.0	5.9
5. ACT Natural Science	1.2	5.9
6. ACT Composite	1.2	4.7
7. College choice number (coded 1, 2, or 3)	0.7	0.8
8. Family income	129	6,974
9. Distance from institution (coded 1, 2, 3, or 4)	0.14	0.66

Scales and other college environmental measures indicates that student images of the college change drastically after a short period of college attendance. Therefore, if we can predict which students are most likely to enter their preliminary curricular choice, we should be able to improve departmental enrollment projection over the simple ratio method.

Research has shown that students with similar first and second vocational choices are more likely to maintain their choices than are students who give divergent first and second vocational choices,[8] and that students' changes in occupational choice tend to be orderly and predictable.[9] Furthermore, vocational classification systems (e.g., Roe's and Holland's) are organized according to similarity between occupations and groups of occupations, and Holland and associates have prepared the foundation for a possible "occupational distance" or "distance between majors" measure.[10]

ACT collects first and second vocational choices in addition to curricular choice, with its Student Profile Section, and a college not requiring ACT could easily collect such information on its application blank. By exploring curricular and major choice stability and change patterns, it may be possible for a college to adjust its ratio derived projections. An additional desirable adjustment might be according to college choice number, using the method suggested by Hoyt and Munday[11] for total institution enrollment projection.

In conclusion, it does seem that it is desirable to develop models for freshman enrollment projection. This could be especially important for "open door" institutions where enrollment in a curricular department takes place at an early stage. College career survival projection techniques and current freshman and above enrollment figures could then be incorporated to make department total enrollment projections for such purposes as determining staffing, equipment, and facility requirements.

[1]See, for example, D. P. Hoyt and L.A. Munday, *Your College Freshmen: Interpretive Guide to ACT Research Services for Higher Education* (Iowa City, Iowa: The American College Testing Program), 1968, pp. 119-122.

[2]J.L. Wasik, "The Development of a Mathematical Model to Project Enrollments in a Community College System," paper presented at the annual meeting of the American Educational Research Association, New York, March, 1971.

[3]We hereby express thanks to Kansas State University, and especially to Donald P. Hoyt and Donald Tarrant of the Office of Educational Resources for their help in obtaining data from university files.

[4]S.W. Lutz, *Do They Do What They Say They Will Do?*, ACT Research Report No. 24 (Iowa City, Iowa: The American College Testing Program, 1968), found, in a study of students attending a national sample of colleges, that slightly over half the students were in the same major field of study that they had chosen at the time they took the ACT battery. Of those who changed, a large proportion selected closely related fields.

[5]Wasik, *op. cit.*

[6]W.W. Cooley and P.R. Lohnes, *Multivariate Data Analysis* (New York: Wiley, 1971).

[7]Lutz, *op. cit.*

[8]J.L. Holland and S.W. Lutz, *Predicting a Student's Vocational Choice*, ACT Research Report No. 18 (Iowa City, Iowa: American College Testing Program, 1967).

[9]J.L. Holland and D.R. Whitney, *Changes in the Vocational Plans of College Students: Orderly or Random*, ACT Research Report No. 25 (Iowa City, Iowa: American College Testing Program, 1968).

[10]J.L. Holland, D.R. Whitney, N.S. Cole and J.M. Richards, *An Empirical Occupational Classification Derived from a Theory of Personality and Intended for Practice and Research*, ACT Research Report No. 29 (Iowa City, Iowa: American College Testing Program, 1969).

[11]Hoyt and Munday, *loc. cit.*

THE ECONOMIC IMPACT OF EXPENDITURES BY OUT-OF-STATE STUDENTS AT A REGIONAL STATE UNIVERSITY

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Traditionally there has been a free exchange of university students among the states in this very mobile American society. Thousands of students have left their native states to attend public and private colleges and universities in other states. Educators have held that this exchange has educational value beca se the interchange of ideas and viewpoints which occur as a result provide the students an opportunity to broaden and modify their perspectives through the contacts they have with the students from differing types of backgrounds. However, some persons, including state legislators, have frowned upon this exchange of students when the exchange involved a larger number of students coming into the legislator's state than the number going out of his state. Reluctance to provide state supported higher education for out-of-state students has increased in recent years because of the general financial strain on state treasuries and the accelerating costs of higher education. This shortage of funds to support higher education has led legislators to increase the fees paid by out-of-state students at state universities, and in some instances limits have been established regarding the proportion of the students who may come to state institutions from out of state. The effect of these actions has been and will continue to be to reduce the number of students who attend public institutions outside their own state and to reduce the mobility of the American student population. Such an action may tend to increase provincialism among American university students and, subsequently, in the American populace. The specter of increased provincialism which would result from policies further restricting the mobility of college students does not bode well for the healing of the divisive differences which currently exist among the American people

The purpose of this study was to determine the cost of educating out-of-state students. It must be recognized that these students are residents of the state in which they are pursuing their education for a considerable proportion of the year, and they expend monies which provide an economic input which would not otherwise be present in the state. What is the relationship between the cost of educating an out-of-state student and his impact upon the state's economy? A study in Oklahoma[1] indicated that out-of-state students actually were an economic asset rather than an economic liability when the true impact of their expenditures was analyzed. In this instance, non-resident tuition nearly equalled the total cost of the education.

A 100 percent sample of the 1,435 out-of-state students at Eastern Kentucky University was surveyed to determine (1) the source of their income, (2) what proportion of this income was provided by in-state sources, such as local employment and financial aid with university funds, (3) the amount of their expenditures, (4) the extent to which they spent money for various items, and (5) what effect these expenditures had on the economy of the state taking into account the multiplier effect.

One-half of the out-of-state students completed a questionnaire on which they estimated the amount of their expenditures for each of several types of items on a weekly, monthly, or semester basis depending upon the nature of the items. The other half kept a spending diary for one week in which they listed all their expenditures each day according to the nature of the item or service purchased. Those students who were sent questionnaires were also asked to identify the sources of the funds they used to meet their college expenses.

Completed questionnaires were returned by 51.6 percent of the males and 70.4 percent of the females contacted. Completed diaries were returned by 33.2 percent of the males and 48.9 percent of the females. The questionnaires and diaries were analyzed and the amount reported on the questionnaires and diaries was prorated over the total population with certain categories such as sex, residence (on or off-campus) and marital status taken into account.

Since the purpose of this study was to determine the economic impact of out-of-state monies expended in the state by out-of-state students, it was necessary not only to determine the amount of their expenditures, but also to ascertain the origin of the funds they used to meet their college expenses, since in-state funds would not have the same impact on the economy of the state as money brought in from the outside.

An examination of the sources of the money which out-of-state students expend revealed that a considerable proportion of these monies came from the university and other in-state sources (Table 1). This was especially true among married students who obtained the majority of their financial resources from in-state sources. The married students obtained 45.3 percent of their college expenses from the university through graduate assistantships or other kinds of university employment of themselves or their spounses; another 16.5 percent came from employment of themselves or their spouses in the local community. Spouses' earnings represented the source of over one-fourth of the money resources of married students. The not uncommon practice of wives putting their husbands through college was evident at Eastern Kentucky University.

The unmarried students obtained a much smaller proportion of their college expense money from the university and other in-state sources. Only 24.3 percent of the resources of single males came from in-state sources, and only 19.2 percent of the resources of single females came from in-state sources. Thus, the college costs of the vast majority of unmarried out-of-state students came from out-of-state sources and represented new money brought into

TABLE 1
Source of Income
Out-of-State Students
Eastern Kentucky University

SOURCE	PERCENT OBTAINED FROM EACH SOURCE		
	Married Students	Single Males	Single Females
Parents or guardian	8.8%	42.1%	54.6%
Income from graduate assistantships and other university employment	13.1%	3.4%	6.2%
Spouse's earnings from university employment	11.0%	—	—
Personal earnings from other part-time work while attending college	4.3%	1.9%	1.2%
Spouse's earnings from other part-time work	12.2%	—	—
Personal earnings during summer or vacation periods	13.6%	26.8%	18.4%
Spouse's earnings during summer or vacation periods	2.2%	—	—
Savings	5.8%	1.0%	6.1%
Loans	9.7%	10.0%	8.6%
Grants or scholarships	11.5%	9.0%	3.2%
G.I. Bill	4.0%	3.2%	—
ROTC	0.1%	0.6%	—
Other	3.7%	2.0%	1.7%

Summary	Married Students	Single Males	Single Females
University Sources	45.3%	22.4%	18.0%
Other in-state Sources	16.5%	1.9%	1.2%
Out-of-state Sources	38.2%	75.7%	80.8%

the state's economy. Over 75 percent of the cost of college for the males and over 80 percent of the cost of college for the females came from out-of-state sources.

One purpose of this study was to determine the extent of the expenditures of out-of-state students and the nature of the goods and services purchased by these students. It is estimated that these 1,435 students spent a total of $4,234,302 during the academic year (Table 2). Of this

TABLE 2

Estimated Academic Year Expenditures for Selected Items for 1,435 Out-of-State Students Enrolled at Eastern Kentucky University during the 1970-71 Academic Year and State Taxes Realized on These Expenditures.

ITEM	ESTIMATED ACADEMIC YEAR EXPENDITURES	PERCENT OF TOTAL EXPS.	STATE TAX REVENUE
Registraion Fees	$1,148,000	27.2%	
Lab & Special Fees	$ 11,261	0.2%	
Food & Groceries	$ 855,326	20.2%	$19,576**
Dormitory Rent	$ 345,088	8.2%	
Recreation	$ 224,614	5.4%	$11,231*
Clothes	$ 213,678	5.1%	$10,684*
Automobile Expenses	$ 207,240	4.8%	$33,676***
Health	$ 147,442	3.5%	
Rent	$ 144,831	3.4%	
Textbooks	$ 138,300	3.3%	$ 6,915*
Laundry	$ 128,277	3.1%	
Personal Care	$ 103,409	2.5%	$ 5,170*
Telephone Toll Calls	$ 101,500	2.4%	
Gifts	$ 97,700	2.3%	$ 4,885*
Alcholic Beverages	$ 90,258	2.1%	$ 4,512*
Books, Magazines, Paper	$ 56,883	1.3%	$ 2,823*
Utilities	$ 32,238	0.8%	
Furniture & Appliances	$ 29,944	0.7%	$ 1,497*
Cigarettes	$ 27,111	0.6%	$ 3,680****
Household Expenses	$ 23,883	0.5%	$ 1,194*
Barber & Beauty Shops	$ 19,836	0.4%	
Miscellaneous	$ 87,484	2.0%	$ 4,374*
Total	$4,234,302		$110,217

* Five percent state sales tax

** Five percent state sales tax charged on food and groceries purchased off-campus. No sales tax on purchases in university cafeterias.

*** Five percent state sales tax.charged on repairs. Seven cent per gallon state tax on gasoline purchases.

**** Three cents per package state cigarette tax plus five percent state sales tax.

amount, $3,113,735 came from out-of-state sources. The biggest single expenditure was for registration fees (tuition) which amounted to $800 for two semesters or a total of $1,148,000. Groceries and food were next at $855,326 followed by dormitory rent at $345,088. These three items accounted for over 55 percent of the expenditures. However, considerable sums of money were expended for other items. Over $200,000 was spent for each of three other items: recreation, clothes, and automobile expenses. Over $100,000 was spent in each of six categories: health, rent for those living off-campus, text books, laundry, personal care, and telephone toll calls. It should be noted that most dormitories at Eastern Kentucky University have telephones in the students' rooms, which probably contributes greatly to the large expenditures for telephone toll calls. These students pay $12 per semester for basic telephone service which is included in the dormitory rent for those dormitories with telephones.

The total expenditures for the academic year per student averaged $2,950 with $2,170 of this amount coming from out-of-state sources. An examination of expenditures per person on a weekly, monthly or semester basis reveals some interesting expenditure patterns (Table 3). A

TABLE 3

Average Weekly-Monthly-Semester Expenditures per Person for Selected Goods and Services by Married Students, Off-Campus Single Males, Off-Campus Single Femailes, Males Residing in Dormitories, and Females Residing in Dormitories.

CATEGORIES	MARRIED STUDENTS	OFF-CAMPUS SINGLE MALES	OFF-CAMPUS SINGLE FEMALES	DORM MALES	DORM FEMALES
	N = 160	N= 73	N = 31	N=569	N=602
WEEKLY					
Food & Groceries	$20.01	$17.19	$16.20	$22.87	$14.48
Personal Care	1.95	2.27	2.35	2.03	2.44
Barber & Beauty Shops	0.86	0.55	0.00	0.66	0.11
Laundry & Dry Cleaners	2.02	1.45	2.17	1.96	3.98
Recreation	2.66	8.26	2.61	7.20	3.01
Auto Expenses	11.90	7.71	5.58	5.49	2.93
Cigarettes	0.59	0.91	1.28	0.67	0.44
Alcholic Beverages	0.78	3.61	1.56	3.47	0.68
Books, Magazines, Papers	1.16	1.27	1.85	1.45	1.00
Household Expenses	3.04	2.43	2.64	-	-
Miscellaneous	1.51	0.94	0.66	1.28	2.78
MONTHLY					
Clothes	$21.02	$13.64	$ 6.75	$16.05	$16.68
Health	10.58	7.04	13.80	11.40	12.06
Rent	61.49	52.36	78.42	-	-
Utilities & Phone	17.59	5.07	12.80	8.32	10.87
Gifts	3.49	5.39	5.20	8.52	8.13
Furniture & Appliances	18.88	1.18	7.10	-	-
SEMESTER					
Registration Fees	$400.00	$400.00	$400.00	$400.00	$400.00
Lab & Special Fees	4.28	2.68	4.20	3.60	4.27
Textbooks	41.82	39.95	47.50	45.79	53.18

comparison of dormitory males and dormitory females who represent over 81 percent of the total population revealed that the males spent about 50 percent more per week for food than the females, $22.87 to $14.48. There is no semester food ticket at Eastern Kentucky University, so each meal is purchased and paid for separately. The males spent over twice what females did for recreation, $7.20 to $3.01, and considerably more on automobile expenses, $5.49 to $2.98 per week. Expenditures for alcoholic beverages ranked quite high among the males at $3.47 per week. Females outspent males on personal care, $2.44 to $2.03 weekly and laundry and dry cleaning, $3.98 to $1.96 weekly. The casual hair styles currently in vogue among college students were reflected in the low expenditures at barber shops and beauty shops with the weekly average for dormitory students being 66 cents for males and 11 cents for females. Expenditures for clothes amounted to over $16 per month for both male and female dormitory residents. Expenditures for doctor and dentist fees and other medical expenses amounted to over $12 per month for females and $11.40 for males. The monthly amount expended for telephone toll calls was rather large among dormitory residents amounting to $10.87 for females and $8.32 for males. It should be noted that nearly all dormitory rooms are equipped with telephones. Expenditures for textbooks averaged over $53 per semester for females and over $45 per semester for males.

The expenditures for out-of-state students affected the economy of the state both directly and indirectly. Many of the expenditures of these students were for items which are taxed directly by the state of Kentucky, resulting in tax revenue for the state. Kentucky has a rather high state sales tax of 5 percent, and nearly all items including food and groceries are taxed. Kentucky has a 7 cents per gallon state tax on gasoline. A total of $110,217 was realized by the state through sales taxes, cigarette taxes and gasoline taxes paid by these students.

The indirect impact of these students' expenditures on the state's economy was even more pronounced. Economists recognize than an increase in expenditures will cause income to expand. This expanded income in the hands of individuals is subject to taxation through sales taxes, excise taxes and income taxes. Thus the state of Kentucky realized additional tax revenue through this expansion in the economy.

Modern income analysis shows that an increase in investment will increase income by a multiplied amount—by an amount greater than itself.[2] The $3,113,735 of out-of-state funds put into the Kentucky economy is paid to suppliers of goods and services who in turn purchase other goods and services. The original expenditures are multiplied in the economy by this process.

Economists can estimate a numerical index showing how much increase in income results from a specified increase in investment. The Department of Economics at Eastern Kentucky University conservatively estimates the current income multiplier for Kentucky to be 1.75. Thus the $3,113,735 of out-of-state monies brought into the Kentucky economy create $5,449,036 of additional income. This additional income provides employment in the state to meet the demand for goods and services engendered by the presence of the students in the community. If the jobs so engendered paid an average salary of $6,000, a total of 908 jobs would be created.

A study of current expenditures in small cities in the South[3] indicates that 44.4 percent of this additional income would be spent for retail goods subject to sales taxes and 17.3 percent would be spent for goods subject to excise taxes. The remainder of this money is spent for untaxed items or saved. Applying the 5 percent state sales tax to the 44.4 percent of $5,449,036 estimated additional income results in state revenue of $120,986 in sales taxes. Estimating excise taxes to average 6 percent and applying this figure to 17.3 percent of the $5,449,036 estimated additional income results in $56,561 additional state tax revenue.

Kentucky has a state income tax with state sales and excise taxes, federal income taxes and tax credits ($20 per person) as deductible items. If the average family size of the holders of the 908 jobs created by these expenditures is 4, the tax credits would equal $72,640. Before applying state income tax rates the additional income created must be reduced by the state sales and excise taxes collected $177,547, federal income tax payments of $342,647 (assuming an average 6.5% on gross income) and $72,640 in tax credits, leaving $4,856,202 subject to state income taxes. If this figure were taxed at the minimum Kentucky rate of 2 percent, $97,124 state income tax revenue would be collected from the recipients of the expenditures of these out-of-state students.

Thus, the state realizes tax revenue two ways from the monies expended by these students—through taxes assessed directly upon student expenditures and through sales taxes, excise taxes and state income taxes paid by recipients of the additional income created by the expenditures of these out-of-state students. The total estimated tax revenue accruing to the state directly from the students and the recipients of the expenditures of out-of-state students is $384,888. These figures and sources are summarized in Table 4.

TABLE 4

Estimated Tax Revenue Accruing to the State From Direct Tax Collections from Out-of-State Students and from Taxes Collected from Recipients of the Additional Income Created by Expenditures of Out-of-State Students at Eastern Kentucky University.

State sales and excise taxes paid by students	$110,217
Sales & excise taxes paid by income recipients	$177,547
State income taxes paid by income recipients	$ 97,124
Total new state tax revenue	$384,888

Educators and legislators have been very concerned about the high cost of educating out-of-state students and especially so during the current financial "pinch" felt by state governments. This has led to restrictions on non-resident enrollment being imposed by various state legislatures and higher education coordinating agencies. The purpose of this study was to determine the economic impact of the expenditures of out-of-state students at a regional state university in an effort to ascertain the true cost to the state of educating non-resident students.

A comparison of state costs for educating out-of-state students with the additional state revenue created by the expenditures of out-of-state students is necessary to learn the true cost of educating non-resident students. The total cost per full-time equivalent student for the 1970-71 academic year at Eastern Kentucky University was $1,661. Of this amount $1,292 was provided by state appropriation with student fees and income from auxiliary enterprises providing the difference. The out-of-state student paid fees of $808, which means he paid the total difference of $369 between the state appropriation and the total cost of his education plus an additional $439. This $439 may be regarded as extra income to the state to subsidize the fees paid by the in-state students. In addition, the new tax revenue accruing to the state through taxes paid directly by these out-of-state students and through the taxes paid by the recipients of the additional income created by these expenditures amounted to $268 per out-of-state student. When these two figures are subtracted from the $1,292 state appropriation, the true cost to the state for educating out-of-state students is seen as $585 not the $1,292 it would appear to be upon a cursory examination of the data. These students returned to the state directly and indirectly nearly 65 percent of the total cost of their education and over 83 percent of the amount of money allocated from the state treasury for their education. The in-state student paid 18.5 percent of the cost of his education. This $585 per student or 35 percent of the total cost would seem to be a modest price to pay for the educational and social advantages for the nation cited at the outset of this paper. The cost to the state of educating out-of-state students is less than one-half the cost of educating in-state students because in-state students do not bring new revenue into the state and out-of-state students pay higher fees.

All estimates in this study are conservative in nature. The income multiplier was estimated conservatively. No effort was made to calculate the profit made from the expenditures or these students by auxiliary enterprises such as the cafeteria and university-operated bookstore. Also, loan money and scholarships were all charged as a university source of student funds when many of the funds were actually private or provided by the federal government. Dormitory rent was not included as a source of state revenue because these funds are earmarked to retire bonds used to build dormitories. Also, no attempt was made to calculate the expenditures by parents of out-of-state students while visiting the campus. These estimates are the best available at the present time, but efforts should be made to refine the research techniques so that the estimation of the true cost of educating out-of-state students can be more precise than it is at the present time.

The evidence in this study indicates that university officials, higher education coordinating agencies and state legislators need to take a very careful look at the real cost of educating out-of-state students when enrollment policies are being considered. Both educational considerations and financial considerations need to be taken into account. This study would indicate that the financial considerations may not be such a negative factor as a cursory examination of state expenditures for higher education might indicate.

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[1] A. Gerlof Homan and Neil J. Dikeman, Jr., "The Net Effect on State Finances of Expenditures by Out-of-State Students," *Oklahoma Business Bulletin*, June, 1969.

[2] For a description of the multiplier effect see Paul A. Samuelson, *Economics* (New York: McGraw-Hill Book Company, 1970), chap. 12, or John Caffrey and Hubert H. Isaacs, *Estimating the Impact of a College or University on the Local Economy*, American Council on Education, Washington, D.C., 1971, appendix B.

[3] *Consumer Expenditures and Income, Small Cities in the Southern Region, 1961*, United States Department of Labor, April, 1964.

PROJECTING ENROLLMENT IN A STATE COLLEGE SYSTEM

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INTRODUCTION

Operations research applications in higher education offer a bridge between Macheavelli and the rational manager. Qualified research teams work to identify problems and provide administrators with a quantitative basis for decisions that will increase their effectiveness in achieving objectives. This trend coupled with the development of management information systems suggests that the future will demand increasingly sophisticated managerial techniques to meet the requirements of a highly inter-dependent and inter-connected educational fabric. Industrial engineering departments and computing centers have been bringing new technology to bear on scheduling, sectioning, and modeling of schools. Institutional research organizations are beginning to analyze and evaluate educational operations and outcomes. With the emphasis upon systems analysis accompanied by the application of sophisticated research techniques, educational policy makers will be able to consider many more variables before making decisions.

One very important area where these techniques are being tested is in the study of student flow. College administrators must be constantly cognizant of the volume and mix of students because problems of cost, program, academic standards and current and future institutional needs are directly dependent upon the projection of enrollment.

Not only must the college administrator have an intimate knowledge of student flow as it relates to his college, but he must be informed about movements of students between and within other colleges and systems.

Repeated revisions of enrollment projections are necessary for each system so that resources can be identified which will provide the students with a high quality education.

PROBLEM

This study has two emphases: 1) to evaluate methods of projection as they were applied in a state college system; and 2) to discuss the influence that these kinds of operations research techniques can have on policy. Both the methods of projection and the discussion of policy relate directly to the state college system. However, this same approach could be easily adapted to an individual college.

There was a need to develop system-wide projection models which were objective and adaptable to a computer. In addition, the models would have to project enrollment within accuracy limits established by legislative demands. The test demanded that the models project known data within dollar limits based on budgetary and building needs.

Four models were developed and adapted to the Minnesota State College System: 1) Survival—growth ratio; 2) Multiple regression; 3) Polynomial curve fitting; and 4) Markov chain. By using the methods in a cross validation framework to project known enrollments it was possible to evaluate both short-range and long-range projections. Short-range projections were defined as those which projected two years beyond the present and long-range was limited to a four-year projection. The definitions are consistent with the need in the state college system to project budgetary needs on a biennial basis and to plan for additional buildings.

CRITERIA FOR EVALUATION

Objective and subjective criteria were selected for use in an evaluation matrix in an effort to identify a model which would be acceptable for projecting total enrollments in the Minnesota State College System.

To be of value to the educational planner a method of projection would ideally meet criteria of accuracy, sensitivity to changing variables, manpower and cost effectiveness, and be adaptable to available data. Additionally, the ideal model would allow for population changes and be adaptable to different geographical areas.

The accuracy limit for a short-range projection was translated into a monetary criterion where the maximum error allowed was 500,000 dollars. This is the amount of the present contingency fund provided by the legislature for the state college system to allow for underprojection. To be consistent the same upper error limit was established here.

The long-range projection necessarily satisfies different requirements. For evaluation of long-range accuracy a limit of 7,000,000 dollars was established. This corresponded to a percentage error limit of four percent for the long-range (4-year) projection.

MODELS FOR PROJECTION

Each of the four projection models was used to project total enrollment in the Minnesota State College System for a period of four-years, 1966 through 1969, for which the enrollment was known. The criteria of evaluation were applied to each projection model for both short and long-range projections and a matrix of evaluation was completed for each projection.

The Survival-Growth Ratio Model

The projection model was composed of three phases: 1) surviving students from grade one through grade twelve; 2) selecting a growth ratio to be multiplied times a total five-year pool of twelfth grade students to yield the number of students who would be attending the state college system and other systems of higher education in Minnesota; and 3) determining a projection of students who would enter each class in each college in the state college system.

The three phases of the model were linked by a computer program which allowed the forecaster three options for each phase. First, he could direct the computer to select a ratio for projection by averaging over a given historical period. Second, he could select a constant ratio based upon study of past trends. Third, he could choose to increment or decrement the ratio.

The survival-growth ratio model when tested against the prescribed objective and subjective long-range evaluation criteria was well within percentage and monetary error limits. It also rated favorably when evaluated against the subjective criteria of projection time, availability of data, information yielded and population change. The results of the objective evaluation are shown in Table 1.

TABLE 1
Matrix of Objective Evaluation for the Survival-Growth Ratio Method

	Short-Range			Long-Range
Criterion	First Year	Second Year	Total	Fourth Year
Magnitude of Error	816	7	823	-1018
Percentage Error	3.34	0.03	1.53	-2.94
Cost Due to Error	$547,902	$4,758	$552,660	$5,344,500
Tolerable Cost Error	$250,000	$250,000	$500,000	$7,000,000
Cost Above or Below Tol.	+$297,902	-$245,242	+$52,660	-1,655,500
Cost of Projecting*	$18.55	$18.55	$37,10	$37.11
No. of Predictor Var.	0	0	0	0

*Cost of using the computer exclusive of writing programs.

The Polynomial Curve-Fitting Model

All polynomials of degrees one through four were employed to extrapolate enrollment for the period of time from 1966 through 1969 and the equation which projected enrollment for those years with the least numerical error was selected for inclusion in the evaluation.

The historical data included full-time equivalent enrollment for the period of time from the year 1950 (Y-15) through 1965 (Y). Ten series of data points, Y-15 through Y up to the series Y-6 through Y, were fit to each of the four polymials.

The historical period Y-9 through Y when fit with a second degree equation provided the greatest accuracy in projecting the known data.

The short-range projection was in error by 3.50 percent for 1966-67 and 2.46 percent for 1967-78 which was outside the numerical limits of accuracy prescribed in the study. This resulted in a cost error which was 561,180 dollars in excess of the limit. The long-range projection resulted in an even greater error when considered for building planning. The error in percentage was 6.88 which would have resulted in dollar error which was 5,521,250 dollars beyond the acceptable limit. Thus, the polynomial curve fitting method as applied in this study rated very low when evaluated (see Table 2).

TABLE 2
Matrix of Objective Evaluation for the Curve Fitting Method

	Short-Range			Long-Range
Criterion	First Year	Second Year	Total	Fourth Year
Magnitude of Error	876	703	1,579	2,385
Percentage of Error	3.50	2.46	2.94	6.88
Cost Due to Error	$588,162	$472,018	$1,061,180	$12,521,250
Tolerable Cost Error	$250,000	$250,000	$ 500,000	$7,000,000
Cost Above or Below Tol.	+$338,162	+$222,018	+$560,180	+$5,521,250
Cost of Projecting	$7.36	$7.37	$14.73	$14.73
Number of Ind. Var.	1	1	1	1

The Multiple Regression Model

A twenty-six predicator variable set was selected which could be divided into two subsets, one which measured the fluctuations in the economy and a second which measured a basic pool of potential higher education students. The variables were used as predictors in three different sets: 1) non-lagged variables, the original set; 2) lagged variables; and 3) first difference variables.

A prediction model was developed for each set of variables and one model for each set was selected for evaluation. The recommendation of Draper and Smith was followed whereby the development of the model proceeded in three stages.[1] Stage one, planning, defined the problem and identified predictor variables. The variables were

screened by verifying the relationship between the predictor variables and the dependent variable in a correlation matrix. Stage two, identification of the model resulted in the selection of a stepwise regression computer program which was used to assist in choosing a mathematical model. Stage three, the application of the model, consisted of applying the mathematical model to project full-time equivalent enrollment for the known data years and then evaluating the model according to the subjective and objective criteria.

When the models were tested it was apparent that the most accurate projection was attained using a predictor variable of high school seniors lagged one year. This model produced projections over a four-year period with no greater error than one percent for each of the years. The model was not recommended as a stand alone model because it was a very bad fit for the historical data. However, it does merit further study.

When predictor variables were lagged four years a less accurate projection was produced although the projection was very good for the first and fourth years. The projection offered another advantage in that it utilized two additional prediction variables, inducted and enlisted servicemen.

When non-lagged variables were used, two prediction variables were selected: 1) four-year pool of twelfth grade seniors; and 2)four-year pool of discharged servicemen. This equation projected well within limits for percentage and number of students for the short-range, although the dollar amounts exceeded the limits, and students were underprojected by 2,151 over a four-year period. This resulted in a dollar error in long-range building planning which was 4,292,750 dollars under what would have been needed for that period. Thus the multiple regression method as applied here did not generally receive a high rating, however, it rated very well for short-range projections. The evaluation is given in Table 3.

Markov Chain Model

In the Markov chain process of order one assumes that the outcome of an experiment is not necessarily independent of past experiments but at most is dependent upon only the immediately preceding experiment. It is assumed that there are given numbers, P_{ij}, which represent the probability of outcome, a_j, on any given experiment, given that a_i occurred on the preceding experiment.[2] The outcomes in this study are referred to as states and the P_{ij} represent transition probabilities.

The states or classes in this study consisted of grade twelve of all public and private school students through graduate students in the state colleges. Also included were transfers in, transfers out and those who exit not to return. This comprised of total of nine states.[3] The states included in the model were as follows:

1. 12th grade, public and private elementary and secondary students in Minnesota.
2. Freshmen in the Minnesota State College System.
3. Sophomores in the Minnesota State College System.
4. Juniors in the Minnesota State College System.
5. Seniors in the Minnesota State College System.
6. Graduate and special students in the Minnesota State College System.
7. Transfers into (out of) the state colleges who are (or remain) resident Minnesotans.
8. Transfers into (out of) the state colleges who are (or become) non-residents.
9. Those students who either leave or do not enter the system.

When the model was placed in a matrix framework some constraints immediately became obvious either by definition or by assumption. This is exemplified in Table 4

TABLE 4
Overall Transition Probability Matrix
Year (n + 1)

Year (n) State \ State	1	2	3	4	5	6	7	8	9
1	X	X	O	O	O	O	X	X	X
2	O	X	X	O	O	O	X	X	X
3	O	O	X	X	O	O	X	X	X
4	O	O	O	X	X	O	X	X	X
5	O	O	O	O	X	X	X	X	X
6	O	O	O	O	O	X	X	X	X
7	X	X	X	X	X	X	O	O	O
8	X	X	X	X	X	X	O	O	O
9	O	O	O	O	O	O	O	O	X

TABLE 3

Matrix of Objective Evaluation for the Multiple Regression Method

Objective Criterion	Short-Range Projection First Year	Second Year	Total	Long-Range Projection Fourth Year
Magnitude of Error	375	458	833	-2,151
Percentage Error	1.50	1.60	1.56	-6.21
Cost Due to Error	$252,052	$308,294	$560,346	$11,292,750
Tolerable Cost Error	$250,000	$250,000	$500,000	$7,000,000
Cost Above or Below Tol.	+$2,052	+$58,294	+$60,346	+$4,292,750
Cost of Projecting	13.74	13.74	27.48	27.48
Number of Ind. Var.	26	26	26	26

which identifies the transitional probabilities (marked with an X). It is not possible for students to proceed from one state to all others in one step or year. The model assumed that it was impossible to go from a given state to any state preceding that state in number. It was assumed that some of the students leave the system never to return, thus constituting an absorbing state, state number nine. Table 4 shows the transitions which were possible and represents the overall transition matrix, P, which was used in the calculation of projections.

The transition matrix P was multiplied times the state vector $A_{(i)}$ to obtain a projection for a given year.

$$A_{(i+1)} = A_{(i)} P$$

where $A_{(i+1)}$ = say 1970 and $A_{(i)}$ = say 1968

The state vector was composed of the enrollment in each state for a given year. Preceding that calculation three basic procedures were followed: 1) determine the maximum likelihood estimate of the overall transition probability matrix; 2) test and model for order; and 3) test the assumption of stationarity.[4] These procedures are explained below.

The maximum likelihood estimates are given by Halperin.[4]

$$\hat{P}_{ij} = \frac{n_{ij}}{\sum_{j=1}^{m} n_{ij}(t)}$$

for i, j = 1, ... M; t = 1 ... T

A test for order tests the hypothesis that the process is of order zero against the hypotheses that it is order one. The following equation is used in making that determination.[4]

$$U = \sum_i \sum_k [\, n^*_j \, (\hat{P}_{jk} - \hat{P}_k)^2 / \hat{P}_k \,]$$

The test is asymptotically chi-square with $(m-1)^2$ degrees of freedom.

The Test for stationarity was completed to determine whether or not the transitional probabilities are time independent. The test is shown below:[4]

$$\text{where } U_i = \sum_j \sum_t \left[\frac{n_i (t-1) \, (\hat{P}_{ij}(t) - \hat{P}_{ij})^2}{P_{ij}} \right]$$

and $U = \sum_i U_i$ with (t-1) (m) (m-1) degrees of freedom.

Two options were available to the forecaster. One, he could select transitional probabilities; two, he could increment and decrement the cells in the transitional probability matrix because the transitional probabilities were generally not stationary and were increasing or decreasing depending upon the state involve.

The Markov model projected both the short-range and long-range enrollment quite accurately, within the error limits prescribed for the study. It also rated favorably in the subjective matrix evaluation framework. The objective evaluation is given in Table V.

A BEST METHOD?

An inspection of Appendix A reveals that no one method of enrollment projection meets all of the requirements which an ideal projection model must incorporate. When the question is raised, what is the best approach to projecting the Minnesota State College Enrollment, the answer suggested by this study is that it is important to employ three methods before making a final decision. The three methods are: 1) Markov chain; 2) Survival-Growth Ratio; and 3) Multiple Regression. It is recommended that the greatest emphasis be given to the survival-growth ratio and the Markov chain methods. The two methods complement each other in the way they arrive at a total projection. The survival-growth projects a total enrollment from a basic pool of elementary-secondary students and then projects the college totals and class totals whereas the Markov chain method projects the class totals and combines them to arrive at a system total.

TABLE 5
Matrix of Objective Evaluation as Applied to the Markov Chain Projection, Option #2

	Short-Range Projection			Long-Range
Objective Criterion	First Year	Second Year	Total	Fourth Year
Magnitude of Error	216	-415	199	661
Percentage Error	.8	-1.45	-.3	-1.9
Cost Due to Error	$145,158	-$328,302	-$183,244	$3,470,250
Tolerable Cost Error	250,000	250,000	500,000	7,000,000
Cost Above or Below Tol.	-104,942	-78,302		3,529,750
Cost of Projecting	$6.78	$6.78	$13.56	$13.56
Number of Ind. Var.	3	3	3	3

It is impossible to objectively identify a "best method." More important is the creation of a model which simulates the system and which projects with acceptable accuracy over a period of years. Thus it is recommended by this investigator that the survival-growth ration method and the Markov chain method be selected for primary projecting methods while the multiple regression technique be given further study and that these methods should be tested over a period of at least three years.

The accuracy of the survival-growth ratio method and the Markov chain method can be imporved by concentrating an effort to gather data which are the same for each college and which may include a greater number of categories than were selected in this study, i.e., it is important that the colleges develop a data base which includes each of the transitions in this study and measures the dropout state. An effort should be made to obtain more accurate data pertaining to the students who transfer out of the system.

A more detailed study using the multiple regression method could identify predictor variables within individual colleges and across the system which could be included in the data base and used in a multiple regression program to supplement other projections.

The data base should be coordinated very closely with the projection of program needs in individual colleges and with the development of programmed budgeting within the Minnesota State College System. A data base is presently being developed by the Minnesota State College information system. Enrollment could be projected directly from the data and it could serve as the initial input for a more comprehensive planning model which could then be used by administrators within the state college system.[5]

TOWARD A NEW ENROLLMENT PROJECTION MODEL

To be used for simulation the four enrollment projection models which have been described in the first part of the paper need further development from the policy-makers' viewpoint. None of the independent variables are directly controllable by the decision-maker. The enrollment models may have to be inputs to a larger model of student behavior. One such approach which appears to be receiving increasing attention may be termed the "Economic Model of Student Choice." The unit of analysis is the individual student and the assumption is made that each student acts as if he subconsciously calculates the utilities associated with each option and chooses the option which has for him the highest net value. The analyst gains a collective profile of potential enrollees and the probability of their opting for a given college. Given certain characteristics of a college a certain number of students will likely attend. The policy-level decision-maker knowing the characteristics of his college can better project attendance.[6] This approach is an extension of the survival-ratio approach in that it uses probability units or probits to project from a basic pool of students who are potential studetns, i.e., they are already in the high schools.

A model of this kind can have such questions answered as: what would be the effect upon enrollment of raising tuition X dollars? or what would be the effect upon enrollment at my institution if a public junior college were to be located ten miles away? Thus, over time, effects of different policies could be assessed once this model became an input into a larger cost effectiveness model.

INFLUENCE OF ENROLLMENT PROJECTIONS ON POLICY

The effort to develop sophisticated enrollment projection models is warranted only when the models are valued by policy makers for their contribution. The use of formal models oftentimes requires as much dedicated study as does the creation of the model. Unless there is accurate and continuous communication between the model builder and management in a fiducial relationship the models will become mere memorials testifying to the expertise of some unrequited analyst.

To enhance the acceptance of the enrollment projection models three things need be emphasized. First, careful attention must be given to developing a clear, short, and simple explication of how it may be used. Second, historical data must be utilized as a base for projecting years where actual enrollment is known. Third, in explaining the models to people at the level of policy formulation a carefully planned effort to eliminate esoteric terminology is necessary.

Assuming that the policy-maker has a clear understanding of the model and its utility it is still necessary that the model have additional characteristics which will enhance the chances of it becoming a part of the decision making process. It should reflect the effect which other institutions may have on enrollment in a given college or system; thus, the optimal model should simulate all of higher education in a given state or area. In addition a variety of independent variable inputs is another asset that a useful model offers. This enables the decision maker to utilize data which are more sophisticated than a student head count.

Simulation or planning models are needed by management to consider "what if" questions pertaining to academic planning, determining biennial budgets, or deciding what additional buildings are needed. A model of this kind is being developed by the Western Interstate Commission for Higher Education (WICHE), at Boulder, Colorado. The model, Resource Requirements Prediction Model (RRPM), is designed to simulate resource allocation alternatives.

Another model, CAMPUS, developed at the University of Toronto, is much more comprehensive and is presently being piloted in the Minnesota State College System at Bemidji State College. The pilot project will be completed in the Summer of 1971.

Both the RRPM and CAMPUS require enrollment projections as an input. With the development of these kinds of models it will be possible in the future to translate departmental related costs into discipline related costs and eventually to identify the cost of a given degree program. Accurate enrollment projections will play an important part in the decision to use these models.

Inputs and outputs of the projection model are very important because planning for both primary and support programs is dependent upon them. Budgeting for additional faculty members, library, or physical plant is justified by the

flow of students projected for a given department or degree program which, of course, effects policy decisions. The decision may be to accelerate a departmental effort or to decrease or discontinue the effort.

One thing is certain, the effective governance of higher education is in large part dependent upon reliable estimates of future behaviors of potential students of higher education. For these estimates to be of use to the educational policy maker, they must be accompanied by a body of theory which enables him to predict the differential effects upon the estimates of various policy alternatives. Models used to make enrollment projections are often dependent simply upon past enrollments together with such environmental factors as economic conditions and draft calls. There is no way that policy changes can be evaluated in relation to the model as none of the variables in the model represent things directly controllable by the policy-maker. As a result of this shortcoming, it has been very difficult to integrate enrollment projections into policy discussions. Enrollment projections are to a significant degree determined by policy and, conversely, a policy is bounded by potential enrollments (given that policy).

Only when a theory of enrollment projections has been supported by reliable research techniques will the rational management model be functional.

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INSTRUCTIONAL OBJECTIVES AND ENROLLMENT POLICY

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In my remarks, I will attempt to focus on the comprehensiveness of enrollment policies particularized to four year college and their relationship to the total Instructional—Institutional objectives. Every institution, of course, has unique enrollment problems, but in the final analysis it is simply a matter of determining campus citizenship. What kind of campus citizen? How many? Where should students come from? How can we serve them? All of these questions are directly related to what our objectives are as institutions.

I am representing Briar Cliff College, a small Catholic liberal arts college of about 1100 students. We have changed much in recent years by becoming coeducational, adopting a 3-term curriculum, joining in a consortium, tripling enrollment, doubling the physical plant, changing the faculty to primarily laymen from primarily nuns, and shifting from a primarily residential college to a primarily commuter institution.

Just a year ago at this AIR Forum, I reported on a study of our instructional-institutional objectives—which I thought was nearly completed. Now, a year later, the study has cleared the faculty and will be reviewed by students, administrators and trustees. Despite the long time in process, I regard the study as a great success on our campus. As the study progressed, many changes were made—and this to me is one of the characteristics of a good study, that is, the implementation of findings as the study proceeds without waiting for the final report. I have said that the study was comprehensive—and many of the changes that took place have *direct enrollment implications*. For example, we dropped all specific course requirements and changed divisional requirements. We adopted a mini-course program oriented to a seminar and to some extent free-university type approach to current problems. We adopted a policy of testing-out coursework and divisional requirements and, finally, we initiated a special summer program for students unable to meet normal college admissions standards. Enrollment policies, in our institution, evolve not so much because of our concern for developing enrollment policy, but rather because our attention has been focused on total institutional direction (for instance, the decision to go co-educational) and departmental decisions on the objectives of instruction.

There are many influences on enrollment policy which I have not mentioned. Being a denominational college obviously influences enrollment. And in our own college, annual budgeting is based on nearly 80% of income from student tuitions. Obviously what we charge for tuition, which involves administrative officers and trustees, can very well influence enrollment. College admission policies are studied and interpreted by a committee of faculty and students. Interpretations vary on what kinds of campus citizens we want. Currently for example, we are sensitive to applications from students *known* to be involved with drugs. And, while major changes in the academic requirements would be approved by the faculty—the practices are influenced by the application of policy.

Admissions counselors influence enrollments by determining where they recruit and in their relative effectiveness in selling the college i.e., in large metropolitan areas, in rural schools, etc. The publicity officer influences enrollment by the brochures he prepares, and the examples can go on.

Through a special tutorial summer development program for low achievers, we make it possible for some persons formerly excluded to enroll in the college upon successful completion of this program.

High school counselors influence enrollments by their preceptions of the college. In one case a counselor refused to refer students to college because of his personal disagreement with curriculum and scholarship policies. And, certainly a major curriculum change influences the kind of student seeking admission.

On campus the student interest in environmental studies has shifted enrollments to these courses. Sociology and other behavioral sciences enjoy a new popularity and we are concerned that what might be short-term trends have undue influence on long-term planning for faculty and facilities.

The College faculty has recommended an upper limit of 40 students per class—of course with many much smaller. Future enrollment policy will undoubtedly be influenced by this recommendation insofar as extensive building renovations are being planned around these smaller classroom—and some informal or parlor-type areas.

Some of our academic departments set up special criteria for enrollment with prerequisites; limitations on majors and non-majors and certain grade point averages. Notable among these would be the Department of Education —which by recommendation from the State D.P.I. has special screening procedures, as well as locally imposed grade point average expectations.

The most recent enrollment problem on our campus comes from the application of the "Extended Campus." How many students should be off-campus at a time? How many in Europe, in the inner city, in interships, etc? Should they be charged full tuition even though they are not using on-campus facilities and are using only a minimum of faculty time? How do we charge for dormitories for week-ends only? Now, all of these problems arise in the face of tight budgets and extended campus learning approaches that seem to be educationally sound and are to be encouraged administratively.

Well, we can see the comprehensiveness of the question of enrollment policy—or campus citizenship. And, we must cope with policy-making. Like good corporation executives we are responsible to those who hold stock in higher education and we are learning more and more about

management. Institutional studies, in my opinion, are more necessary today than ever before in my experience. Even small colleges are willing today to invest in an institutional research man—who was until recently found primarily in the big schools or in the well-to-do smaller ones.

One of the instituional studies providing management data that I consider necessary as Dean is that of cost of instruction. Enrollment policies won't be set entirely on the basis of cost—but cost is one most important ingredient. And, if value decisions are made in favor of expensive programs we should know that fact, too.

On small college campuses at least we try to individualize the educational process for our students. The same individualized process seems to me to be necessary in applying the facts from institutional studies. Cost of instruction information can be used for direct planning with the academic departments for dropping or adding courses and majors, or adding or dropping staff members; and especially for persuading faculty members to make courses more attractive; for setting-up budget plans, etc. This application of institutional studies provides hope that institutional research men might become a most vital part of program-planning-budgeting in the near future.

Institutional research studies should be undertaken jointly by those small colleges working in consortia. Small enrollment classes or "exotic" offerings might be undertaken cooperatively after thorough study—in any of several possible ways including joint utilization of faculty and/or facilities. The joint planning can be expanded to responsible regional or area planning for future enrollments in the various programs.

Regional planning also brings up the question of enrollment policies toward community college and other transfer students. A stated goal of many community colleges is transfer education following open admissions. One of every four students in Iowa now enroll's in one of the 18 free-access community colleges. Clearly, the broadened objectives of the two-year institutions has not yet been satisfactorily reconciled with local four-year colleges' objectives. Of course, the routine junior-college student with a "C" average typically has no difficulty in transferring. Non-routine students transferring do have a problem demonstrating to admissions committees that they have reached a level of attainment comparable to native students in good standing. The CLEP might help with this problem. With relaxed curriculum requirements in four-year colleges there is a crack in the wall, and it has even been reported that some institutions are accepting transfer students and waiving general education requirements for them. Enrollment of transfer students is further complicated by lost credit in transfer and a shortage of financial aid already allocated to local students. There seems to be a lag in accommodating as rapidly as possible the expanding transfer population. I.R. can help by seeking and disseminating information pointing up the problem and need for up-dating policy.

A most recent issue on our campus is the matter of involving students in the area of admissions. Of course, student involvement in decision-making must be balanced against total institutional goal setting—in which students actually and practically have a minor voice. Student voice is rarely representative but nonetheless valuable in expanding the range of information available to the college and in improving communications on campus. But just how far can we involve students in the application of policy to individual student applications?

The question of student involvement might be dependent upon the institution and no doubt the student role will change. Whatever the case, enrollment policy formulation is comprehensive and very much like and related to the statement of institutional objectives. Not everyone in the College is responsible for all of the objectives, nor will there be complete uniformity in enrollment policies.

One person or a few will not succeed in setting acceptable over-all enrollment policies. Progress is and probably will be slow—partly because wide involvement allows for disagreement—and the process never really ends. The institutional statement of objectives seems to me to be the essential first step in enrollment policy formulation. The "Touchstone" of objectives provides for some measure of consistency in applying policies, and well-written objectives can also provide for evaluation of the policies.

THE ROLE OF INSTITUTIONAL RESEARCH IN ENROLLMENT POLICY FORMULATION IN AMERICAN COLLEGES AND UNIVERSITIES

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WHO MAKES ADMISSIONS POLICIES?

Admissions policies may be the result of constitutional or legislative action. Although changes are possible, they may take considerable time to effect. Policies may also be established by state commissions or by boards of regents or trustees; typically, such policies can be modified more quickly.

If a university administration can set its own admission policies, adjustments can, in theory if not in practice, be made promptly. That is not to say that there are no limits to such action. There are practical constraints of space (classrooms, dormitories, food services), money (to hire faculty to maintain student-faculty ratios, to equip laboratories), library resources, and the problems of satisfying the various constituencies which are interested in the student population (i.e., students themselves, faculty, alumni, parents, the local community, legislators—for public institutions, accrediting agency requirements, the administration with respect to civil rights, and so on).

The ultimate limit of the effectiveness of admissions policies of course is the collegial faculty which will determine who shall survive once individuals are given the opportunity for higher education.

HOW ARE ADMISSIONS POLICIES FORMULATED?

If a university has an open-admissions policy, or the policies are so broad that no real barriers exist, then the enrollment mix is obtained by default except insofar as local initiative is effective in recruiting and promotional activities.

If the admissions policies are mission-related they would reflect the general university aspirations (again, whether these are externally derived or internally conceived).

Ideally, policies which relate to the admissions function should simply be the extension of known, and accepted notions of the institutions's goals and objectives.

Some authoritative office, at whatever level, puts into writing the university's plan for serving its appointed market(s). Depending upon the skill and insight of the executive at this point, the policies serve to implement the academic posture either well or badly.

HOW ARE ADMISSIONS POLICIES EVALUATED?

The starting point in the process of evaluating admissions policies is to summarize all existing policies, written and de facto. From those that are official one should be able to identify the conflicts, duplications and inconsistencies and the policies that are not enforced or implemented or realistic.

Much more difficult, however, is the clarification of the de facto effects of policies which often have subtle or unintentional consequences. For example, high required entrance test scores limit the number of disadvantaged students that can be accepted, no matter how eloquently or piously the university's nondiscriminatory policy is stated.

The institution which sharply limits out-of-state students—and there may be excellent reasons for so doing—calls into question the richness of the total academic experience for the in-state students who may already be judged to be too parochial and like-minded.

The institutional researcher must review the record of the university's performance versus its policies. What have been the characteristics of the student population with respect to quality, geographical representation, sex, ethnic background, religion, income, academic majors and aggregate numbers? How have these changed (without policy changes, or with them)?

The evaluative benchmarks are simply these: First, what have been the outcomes of our admissions policies? Second, do they accomplish what they were intended to do? If the policies do not work, but are nevertheless consistent with institutional goals, why don't they work?

This process can lead to very ambitious questions and costly research: Are there important, but less obvious, reasons for the "no-shows" at your campus compared to others? What factors correlate highly with academic and/or personal success? What factors correlate positively with those in the attrition group? Are the differences in performance between groups (when compared by according to marital status, age, extent of military service, for example) important enough to warrant special procedures?

The Board of Regents of the Montana University System (six campuses) requires each unit to admit all Montana applicants who are graduates of an accredited high school in the state "so that all students of the state may have the opportunity to participate in a quality program of higher learning."

Such a pronouncement is popular with taxpayers and makes some sense in a state with a stable (static) population thinly distributed over a large geographical area and having a limited number of community colleges.

However, in a period of tight budgets, we are coming to question the validity and the desirability of the open-admissions policy because of its inevitable adverse qualitative effects. Our students pay less than 20 percent of the costs of their education. We do not believe that we can operate as did the marginal merchant who, with a mark-up which was less than his operating costs, felt that he could make up for his losses with an increased volume of sales. More students are not the answer to our fiscal problems—certainly not if we are committed to quality instruction.

Our studies are fragmentary and incomplete but present evidence suggests that very high attrition rates among the less qualified entering students is poor educational policy, costly in dollars and emotional trauma to students and parents, and an inefficient use of resources. We need some degree of educational specialization within the system with different entrance requirements for each unit (as have many states with community colleges, state colleges and universities).

INSTITUTIONAL RESEARCH IN ADMISSIONS POLICY CHANGES

An office of institutional research may be involved in policy changes at two levels: passive, or active. In the first instance, the researcher would be suggesting answers to the "what if" type of question. One would be asked to predict probable outcomes to suggested alternatives. For example:

> What would be the consequences of higher entrance requirements on the numbers applying, admitted, retained after one year, and graduated; on the distribution of students among major study areas (for example, health and physical education or education as opposed to physics or microbiology); on comparative staff loads, service and remedial course enrollments, and so on?
>
> What is the university wanted to alter the proportion of out-of-state students admitted—what effect would this have on fee revenue, on dormitory and food service bonding commitments, on the number of graduate students, on the intercollegiate athletic program?
>
> What is the administration chose to promote Black, or Chicano, or Indian Studies, or other minority group enrollment? How would this affect scholarships for other students, work-study and other financial aids, the counseling and advising program, student program (social) activities, student credit hours earned (which create mythical FTE's), and so on.

Similarly one could list the potential ramifications of other areas of change:

> What would happen as a result of across-the-board versus selective fee changes?
>
> What are the implications of restricting enrollments in certain curricula?
>
> What measurable effects can be predicted with different regulations affecting transfer students or probationary status for incoming students?

The foregoing list is illustrative and far from exhaustive but does suggest the variety of problems that are legitimate areas for institutional research investigation. The initiative for posing these questions very often comes from the central administration; and unfortunately, in the small university, for instance, its office of institutional research is understaffed and hence overworked. We tend to run our offices too much like the local fire station, i.e., our activity is in response to an emergency.

For a more active role, the institutional researcher, it seems to me, can be enormously useful in contributing sophisticated information and counsel. Rather than merely assisting in making choices from given alternatives, an office of institutional research is capable of providing essential inputs for policy determination and implementation.

Given the opportunity and the financial support, a well-staffed and professionally competent institutional research organization can provide historical, comparative, and normative material which will contribute importantly to the quality of administrative decision-making. Although few of us have a true MIS for the collection and analysis of internal data, and fewer still have a sufficiently detailed and de-bugged simulation apparatus for massaging external data even if these were available and reliable, the tasks can be done nonetheless. Most of us successfully rely on personal skills for projecting the impact of judging the desirability of proposed new policies.

The institutional research office, which makes available to the president's office studies in anticipation of, and prior to final policy determination, will be making fullest use of its potential for service. One can conceive the circumstance where institutional research offices will be permitted, if not always requested, to document the need and justification for new curricula, degrees, and schools. This early participation in the long-range planning process with the full problem implications, would clearly enable I.R. offices to contribute more effectively in establishing and implementing admissions policies.

CONCLUSION

In closing, let me speculate for a moment on the various organizations that have been eyeing higher education and publicizing the results of their studies.

The Carnegie Commission on Higher Education, the HEW sponsored task force of Frank Newman, the National Junior Chamber of Commerce report, the Assembly on University Goals and Governance (The American Academy of Arts and Sciences project assisted by the Ford Foundation to promote academic reform), the White House Youth Conference's task force, and other comparable groups are busily engaged in diagnosing the ills of the body academe.

Without attempting to predict the specific outcomes of these efforts, it is safe to conclude that no responsible university administration will choose to, or be able to ignore them all. At the very least, university presidents will find it necessary to defend their resistance to change. Or, if the pressures are strong enough, they will have to justify their recommendations for change whether to faculty, students, alumni, or state coordinating councils.

Here then, is a clear and magnificent opportunity for institutional researchers to become involved productively in keeping the debate on the track in reducing ignorance and misinformation, and in providing the positive documentation which will be required by university spokesmen. As someone has observed: We cannot stop the wind from blowing—but we can build windmills.

TRENDS IN ENROLMENT POLICY FORMULATION IN THE ONTARIO UNIVERSITY SYSTEM

Bertrand L. Hansen
Council of Ontario Universities

With your permission I should like to begin by setting a background, the historical base, if you will, of enrolment policy in Ontario universities over the past decade which exerts a kind of inertial pressure on future policy, proceed next to the likely developments in undergraduate and graduate enrolment in our system and end with a brief discussion of new developments of a more general nature which are appearing on the horizon.

POST-SECONDARY EDUCATION IN ONTARIO DURING THE DECADE OF THE SIXTIES

The Sixties were a decade of unprecedented growth in post-secondary education in Ontario, resulting both from the greatly increased population completing high school and from the changes in people's attitudes towards post-secondary work; there was a revolution of rising expectations in educational matters, as in others. In 1961 there were just under 29,000 full-time students in Ontario universities; in 1970 the number was about 111,000, an almost fourfold increase over the decade. Increases in part-time enrolment were even more startling. In 1960 with a few notable exceptions, Ontario had not universities but colleges. By 1970 a number of universities had been created out of colleges and a number more started where there had been none before (there are now 16). In the middle of the Sixties eighteen colleges of applied arts and technology (CAAT's) were created in various parts of the province to fill the need for post-secondary non-university education (there are now 20—or 100, depending upon whether you include branches). In 1967 total non-university post-secondary enrolment in the CAAT's, nursing, Ryerson, and the agricultural colleges was about 27,000; by 1970, a matter of three short years, the number had almost doubled to 52,000 with most of the growth in the CAAT's. As might have been expected post-secondary costs increased even more rapidly. It is always more costly, *ceteris paribus*, to build a new plant to produce a new product than it is to increase from one volume level to another at the same location. So it is with universities and colleges of applied arts and technology, which required many new plants at many new locations. Put these new developments and enormous expansion together with the perceived need in the early Sixties to increase participation of our population in post-secondary education, build up our graduate schools, and upgrade the qualifications and salary levels of professors, and we have the major reasons for the large increases in operating costs of post-secondary education.

ENROLMENT PROSPECTS FOR ONTARIO UNIVERSITIES

The policy of responding to social demand which applied in the Sixties at the undergraduate level is unlikely to be changed in the Seventies. The door will be kept open for all students who "qualify" and there will be a more liberal definition of what "qualify" means. In the historical elitist system from which Ontario exploded in the Sixties the "qualified" student was the one whose parents could afford a university education. Emphasis was also on the entry qualification; it was believed that progress through university would be insured by keeping this level high. We have seen a shifting of both these economic and entry level emphases—not without considerable agonizing and conflict—to concern less for the economic wherewithal and entry level qualification to more for what might be called, in the industrial accountant's terminology, "contributed value." This "new" view holds that if post-secondary education is one of the good things of life it should be more or less universal and it should be concerned not so much with the qualifications at entry as with what the student gains from his period of stay. It will be interesting to see the results of the City University of New York experiment with open admissions as a test of this theory. In any case, for Ontario this prospect means many things—among them, elimination of the university preparation year (grade 13), probably ultimately to termination of high school at grade 11, continued pressure on the universities to enrol additional numbers of undergraduate students in the face of declining operating and capital support, and the creation of alternative but less expensive modes for delivery of undergraduate level education.

It will be quite different at the graduate level. Policies are already being developed which are designed to restrict entry into the graduate schools. In the boom and bust kind of approach we have taken at the graduate level we began to build up the Ontario graduate schools in the early Sixties to meet the anticipated demands for highly skilled manpower with much of the demand coming from the university sector for staffing to meet bulging enrolments, especially in the social sciences and humanities. During the buildup period large numbers of professors were imported from other countries and we now have the situation that Canadian universities have heavy percentages of non-Canadian faculty, especially in social science and humanities departments, and the qualified people now coming out of our graduate schools according to the plan of the early Sixties are bumping up against the barrier of few university posts because the money just isn't available at the same rates of increase as in the past. Nationalism, both xenophobic and rational, is being fed by this situation. There is great concern for the effect of the American social scientist on the cultural identity of the Canadian university student. The restrictive policies, worked out under joint arrangement with the universities but restrictive nevertheless, do not involve the setting of quotas but instead raise tuition fees and restrict the flow of financial aid to graduate students particularly in the social sciences

and the humanities. This arises because financial support for sciences and engineering is largely federal and that for the arts and social sciences largely provincial. The pinch is felt at all levels of government but the response rate varies inversely with the level—the province is putting the squeeze on now but it will happen later at the federal level in support for research in the hard sciences.

What worries me is the out-of-phase condition resulting from the policy of expediency at the graduate education level. It has been shown that the mean time to production of a PhD degree from the baccalaureate is 8 years; thus, the results of constricting entry into the pipeline now will begin to show up in 1979 just as we are now reaping the results of decisions we made in the early Sixties. Do we know enough about the demands for highly skilled manpower in the late Seventies and Eighties to be constricting the entry into the pipeline now? If breakthroughs in energy, transportation, environmental control or health services come about or we are able to shift massive resources to these sectors, will we have been guilty of constraining growth at exactly the wrong time as we may have inflated growth at the wrong time? I don't know the answer to this and I don't think anybody else does, but I feel very uneasy about it and wish for a more stable policy of growth which doesn't swing with the winds of political expedience one way or the other. Do we not need a much longer time frame for planning the production of highly trained manpower?

A few statistics will give some quantitative meaning to my general remarks. The present 1970 full-time undergraduate enrolment in the Ontario universities is about 104,000; it is projected that enrolment will grow to a level of about 186,000 in 1975-76 mainly as a result of the open door and the upgrading of teachers' colleges to university status during the early part of this period. If recent trends continue, much of the growth will be in arts and science. The Province has made it plain that it will respond positively to social demand at the undergraduate level and that it will pursue the upgrading of primary teachers' colleges from a one year post-high school requirement to a bachelor's level requirement. Thus, over the five year period it is expected that the annual rate of growth of undergraduate enrolment will be roughly 12%. Another way of looking at this growth is to examine participation rates. Undergraduate enrolment is taken largely from the 18-21 age group. In 1960 the participation rate of this age group was 12.5%. It almost doubled to 24% in 1970. The Economic Council expects it to be 40% in 1980. By contrast the 1970 rate in the U.S. is 35%; it will be well over 40% in 1980.

On the graduate side, the universities projected a total of 20,000 full-time students for 1975-76 from the present level of 15,200; this represents a "desired" rate of growth of about 6%. In contrast, during the Sixties the two sectors had grown at the same rate of about 14% per annum. But, the universities' preferences are not going to be met at either level. They shudder at the thought of 186,000 undergraduate students in 1975-76 when their interpretation of the resource capacity of this sector of the system at that time would be nearer to 140,000 or 150,000. Similarly, they are alarmed that their modest projections of graduate enrolment levels are already being constrained to lower levels of growth by the restrictive policies. Graduate enrolment, as a result of these policies, is projected to increase next year by *only 3%* over 1970-71. And the outlook for the next four years for this sector is similarly grim. Depending upon where you sit this is good or bad. In governments' view the public will support them in these policies. In the universities' view, if there can be said to be one view, it is a short-sighted policy which will cause them further hardship in maintaining quality and at the same time it will be counter-productive to the improvement of the proportion of Canadian academics in their teaching departments. So much for an overall view of enrolment policy in the Ontario system over the next several years on the same model.

NEW DEVELOPMENTS ON THE HORIZON

There are several recent and planned developments which indicate further directions of university education in Ontario.

Last year there was a thorough analysis and report of the state of engineering education in the provincial universities. This study was the pilot model of a series of discipline assessments which will take place over the next several years. The report (Ring of Iron) not only recommended enrolment targets, graduate and undergraduate, by university (with limitations on the PhD degree—in fact, a cutback of 17%) but it also recommended specialization at different engineering schools (some universities should cut out programs) and a shift from analytical studies as dissertation material to more design and synthesis. One observer has called this the most important study of engineering ever done in Canada. In any case its recommendations will have substantial impact on the future of engineering education in Ontario.

Another likely development is the formation of an "Open" university. Mr. Bernard Trotter, in a report entitled *Television and Technology in University Teaching*, offers as one alternative a systematized teaching/learning process patterned after that described in the UNESCO/IAU document, *Teaching and Learning*. In this model, which in my view is quite a likely development for Ontario considering the shortage of 30,000 student undergraduate places over the next five years, the general B.A. of requisite quality for large numbers of students would be provided by highly developed packages of instructional materials prepared centrally by talented and creative academic teams and made available at local and regional centres where each student has an institutional home and a qualified professoriate for tutorial sessions. The choice of courses would be narrow but the courses would be of high quality with 20% change planned each year. The ratio of locally based faculty to students would be about 1/75 making the model an economical alternative. Simplified cost models are presented in the report to support the proposal. I alluded to the effect of foreign faculty on the cultural identity of the Canadian university student. Textbooks and reading materials generated in the United States and Great Britain make up a large part of the reading matter for university courses in Canada and probably have greater influence on national identity than faculty. Also, the book publishing industry in Canada is in

dire straits. A combination of low volume, financing problems and ineffective marketing and management has led to an admittedly distressing situation. It seems to me that the open university on the model just proposed would produce and enormous secondary benefit by causing the creation of university level educational packages (specifically prepared textbooks if you will) *unique to Canadian university education* which, if produced by Canadian book publishers, would do much to correct the problem of non-Canadian oriented textual matter produced by non-Canadian book publishers.

Another important development affects part-time students. It looks like part-time education at the university level will finally achieve some form of parity with full-time. The Ontario formula financing system for the past several years has funded universities at slightly lower levels for part-time than full-time. Parity of provincial funding will come about in the next couple of years and it is likely that auditing methods will be invoked to assure that the internal allocations match external funding (one example of program budgeting at an aggregate level).

The rising costs of education is causing governments to examine deferred tuition payment plans to relieve the burden of educational costs on the taxpayer. The Ohio and New York State legislatures have recently seen such plans introduced. Similarly, a contingent loan repayment scheme has been proposed for discussion in Ontario. In my view costs of higher education in Ontario are going to stabilize over the next several years and there will be no need to introduce deferred payment plans which in effect do what the graduated tax system now does. It seems that loan/grant schemes now in effect, but altered to make all grant in first year and all loan in higher years would do more to encourage students from lower income groups to attend university. A recent study group in Ontario recommended maintenance of such a plan with a means test rather than shifting more of the cost burden on to the student.

I want to say that I realize that the situation in the U.S. is quite different. Almost all Canadian universities are publicly supported at high levels. The private colleges in the U.S. (about 1800 in number) are in danger of foundering unless some way of making them "price competitive" is discovered. This is one attractive feature of deferred tuition plans which will cause them to receive serious consideration in the U.S.

I think higher education will become less expensive because of cutbacks in graduate education (3—4 times the cost of undergraduate) and the provision of economical alternatives to present models (the open university). I believe we will see over the next several years the application in universities of something called "value analysis" in business—that is, producing a product of the same quality but cheaper by analysing the value contributed to the product by each material, component, and operation. This appears to me to be much more attractive than taking it out of the student's hide. There has been coincident with the development of graduate education, a proliferation of subject matter to the point that we now have a great number of courses in the curriculum, many taught in small classes and many having a great deal of overlapping subject matter. The pressure of declining funding levels will cause these to be examined against the "value" criterion and there is much gold to be recovered in this mine.

I am reminded of Vilfredo Pareto's law of maldistribution applied to the distribution of wealth in Italy at the turn of this century—90% of the wealth was controlled by 10% of the population. I leave you with the thought that the same law applies to the distribution of value in our academic programs and institutional studies—90% of the value lies in 10% of the subject matter and 10% of the institutional studies. It is the task of universities, especially institutional researchers, to separate the real gold in the mine—the programs courses, subject matter of value and the institutional data of value—from the fool's gold.

OPEN DOOR VERSUS REVOLVING DOOR: IMPLICATIONS FOR POLICY FORMULATION IN THE JUNIOR COLLEGE

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Coffeyville Community Junior College

Today we are concerned with institutional research as it relates to enrollment policy in junior colleges. This topic is very timely especially as junior colleges are developing rapidly throughout the nation often with major emphasis being given to providing space for students. At the same time the junior college has accepted the responsibility for open-door admissions without serious thoughts being given to the implications involved. If one would review the catalogues published in junior colleges today, one would rarely find one that does not state that it is an open-door institution—admitting all students with a desire to enter. In addition, many have recruiting teams. This philosophy sounds very good and excites many people. There can be very little doubt that the institutions are admitting all students that apply for admission, but the critical test is—how many students find programs that meet their needs, and how many remain until completion of the program or until they are ready for entry into the world of work. Examination of an institutions' enrollment figures will indicate that there is very little correlation between the enrollments of freshmen and sophomores. Therefore, the question is, "Are the junior colleges actually living up to the philosophy as an open-door institution or a revolving-door institution?" This question can only be answered through institutional research to determine what is happening to the students that were admitted. A study of the literature reveals that junior colleges have been dragging their feet in researching the implications of their enrollment policies and procedures.

Recently I visited a junior college and spent a considerable amount of time reviewing the class schedule to determine the curricular offerings and implications for future developments. Further study of the class schedule revealed that a majority of the courses offered were for freshmen with few, and in many cases no courses at the sophomore level even though the total full-time equivalent enrollment at the institution was approximately 4500 students with a graduating class of 64 in 1970. The plans were to eliminate commencement exercises beginning this spring. The question that must be answered is, "What are the causes of such a situation?" Personally, I do not feel that we can use the old excuses such as marriage and military service. We must face the fact that the junior college in this community is not meeting the needs of the students; the institution has a revolving-door admission policy instead of an open-door admission policy.

A recent review of the enrollment data from the ACT in Kansas revealed that 60 per cent of the students received a raw composite score of 20 or less. Therefore, the traditional approach to instruction will not meet the needs of these students. If the students are enrolled in the regular programs they will be with us one semester or less. Are we concerned enough to do something about the situation, or are we satisfied to boast of an increased enrollment each year?

In 1967 at Coffeyville Community Junior College we became very much concerned with the mathematics programs. On the basis of the traditional testing program we could get the students enrolled in Calculus I, but the students were not completing the course even after two to three attempts. What was wrong? To attempt to resolve the problem a complete study of the mathematics offerings was made which revealed that we had many peaks and valleys in the mathematics program. General Mathematics did not provide the background for Intermediate Algebra, Intermediate Algebra did not lead into College Algebra, and College Algebra did not provide the experiences for Calculus I. Therefore, a major revision of the Mathematics Division took place. General Mathematics and Intermediate Algebra were replaced by Directed Study Mathematics 50 and 70, and a new course, Mathematics Analysis, was placed between College Algebra and Calculus. This step provided the necessary experiences for the students planning to continue in programs requiring advanced mathematics courses, but did very little for the student with limited experiences in mathematics. Today, we feel that the mathematics program at Coffeyville Community Junior College is meeting the needs of the students. Therefore, research was very helpful in the development of the mathematics program.

A further review of the information provided by the ACT revealed that 38 per cent of our entering students had received a raw score of 15 or less in Social Studies Reading and Natural Science Reading which indicated that help was needed in this area. Therefore, a reading laboratory was developed which at the present time has 25 per cent of our students enrolled. This record sounds very impressive, but actually we should have 50 per cent of the students enrolled in the reading laboratory. Our reading program is the nearest to an individualized instruction program that we have because each student is competing against himself and works at his own level and rate of speed. The reading laboratory is in use from 8:00 a.m. until 10:00 p.m. daily.

During the past five years much emphasis has been placed on the use of the Instructional Resource Center at Coffeyville Community Junior College because we were very much concerned with the usage that was being made of the many resources that were provided. To our amazement it was discovered that many incoming students did not know what a card catalogue was. In an attempt to solve this problem, a six week orientation course to the library has been inaugurated in addition to the regular orientation program. Various media are used in the orientation program including television, cassette recordings, microfilm and microfiche.

A further look at the Instructional Resource Center revealed that the students were still not using the facility to our expectations. Therefore, it was decided that we would

look at the reading level of the books included in the library. In order to evaluate the reading level of the books, the SMOG test was used on a random sample of the books.

This revealed that the reading level of the books was much higher than the reading level of the students. The reading level of the various categories of the books is as follows:

Fiction	Mean — 10.07	Range — 8.18-11.97
Short Stories	10.54	7.21-13.87
Biography	12.36	10.63-14.09
Generalities	13.69	10.74-16.64
Philosophy	13.49	10.92-16.06
Religion	12.58	10.30-14.86
Social Science	13.66	11.29-16.03
Language	11.80	9.70-13.90
Pure Science	13.92	11.78-16.06
Technology	11.79	9.24-14.34
The Arts	11.79	9.80-13.78
Literature and Rhetoric	11.55	9.06-14.04
General Geography-History	13.63	11.34-15.92

A library must challenge all students, but the students that were not reading at a high level were left out. They would become discouraged and avoid the Instructional Resource Center entirely. In an attempt to solve the problem, a greater emphasis is being given to increasing the holdings of books at a lower level. This has caused some confusion because a majority of the books being published have been written by college professors for college professors with very little attention being given to the students. At the same time the study revealed the need for a greater array of audio-visual materials to meet the needs of the students.

During the spring of 1968 a complete study was made of the chemistry program because approximately 50 per cent of the students were failing to complete Chemistry I. The 50 per cent that completed Chemistry I were not continuing in Chemistry II, and a large per cent were not continuing in advanced chemistry courses. It was during this period that the instructors had changed to a new edition of a textbook which was very popular at the time. One of the instructors complained that the textbook was too advanced for the students even though a complete analysis was made of the book before the final adoption. A SMOG test was completed on the book which revealed that the reading level of the book was grade 17 and the average reading level of the student enrolled was 11.50. This accounted for much of the situation, but at the same time it was felt that the traditional approach to the teaching of chemistry was not meeting the needs of the students. Therefore, the format of the course was changed to the audio-tutorial approach. At the time that the change was made to A-T, the Institutional Resource Center had not been completed. It was necessary to use the cassett recordings to provide the necessary feedback and information to the student. During the summer, five instructors were employed to develop the course and the necessary related materials to achieve the objectives of the course. A complete new syllabus was developed with stated behavioral objectives and related activities. Shortly after the beginning of the fall semester we ran into many complications; the course had been developed on an individualized basis, but the instructors were not willing to accept a modified grading system which would take into account the different levels and rates of learning of the individual students. Shortly thereafter the instructors came to the Dean with the complaint that the A-T approach would not work because the students were not progressing at one rate. The time was ripe for the modified grading system which was accepted by the instructors. Therefore, the A,B,C, Inc. grading system was initiated with no time limit on completing the course. At the present time approximately 85 per cent of the faculty prefer the A,B,C, Inc. grading system and 90 per cent of the students prefer this system. It is interesting to note that five of the six state four-year institutions have accepted the grading system with no penalty to the student by ignoring the Inc. or not including it on the official transcript. The sixth institution has not been contacted because it is located in the northwest section of the state and our students do not transfer to the institution.

English composition has been an area of great concern to the junior college and much research has been conducted in this area, but with very little success to report at this time. For several years we have done considerable research in English composition, but at the present time we do not have a program that is meeting the needs of the student or even keeping his interest. We are attempting to develop a complete sequential program in which the student will start at his level of competence. He will be tested on each unit until he achieves the 90 per cent level. It will be possible for the student to completely test out of the course at which time he will receive full credit. Therefore, the student may complete the course which is on record regardless of the time that it will take him.

This afternoon I have discussed many research attempts which are taking place in the junior college. They have many implications for enrollment policies, but we have barely scraped the surface. The future is much brighter, because educators are beginning to acknowledge the need for such research if we are going to reach our highest potential in the junior college to become truly an open-door institution with open admissions instead of a revolving door.

POLICY IN TIMES OF CRISIS

MANDATES AND CAVEATS ON SETTING GOALS AND OBJECTIVES

Monty S. Berman and Richard F. Barton
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For Jacques Barzun, the American university is dead; for Paul Goodman, the college/university experience is only an obstacle course. Throughout the country student dissent continues to polarize many segments of the population. There are those who would respond with regimentation of behavior on the campus, while others, respected educators among them, are concerned that not enough students actually rebel!

For the most part, it is the university officials who are receiving the brunt of the criticisms. Administrators are under heavy pressure, from within and from without, to do something. But what? Many are turning to a reevaluation of the goals of their institutions, or are seeking a reaffirmation of the university role. One study reached a conclusion that what is needed is an extension of the university's mission.[1]

But goals and objectives, missions and roles, purposes, aims—these are what pages 5 and 6 in university catalogs are made of. Still, some claim that the disparity is too great between promised or implied results and the actual process many students experience, and that higher education not only fails to produce but winds up inhibiting the very intelligence, curiosity, enthusiasm, and intellectual initiative that the catalog statements say are trying to be developed.

If this is true, what is the value of the university's attempting to set goals and objectives or trying to fulfill roles or missions? Is there, perhaps, a disvalue with basically restricting aspects inherent in such activities? Dwayne Huebner suggests that refined goal searching is fruitless:

> This search for clear and unambiguous goals is a fanciful and, to a large extent, an idle search. It serves almost the same function to those over twenty-six that drugs serve for the younger—tune in, turn on, drop out. To find the purpose of the schools is thought to restore the calm and enable educators to drop out of the troublesome political process of living historically.[2]

Setting goals gives a sense of rational purpose to one's activities. Freud has already postulated that religious concepts evolved out of man's need to avoid facing up to the arbitrariness of life,[3] by endowing life with particular purposes such as perfecting man's nature, developing higher levels of existence, and even the perpetuation of life itself. Thus, with purpose in life already preordained, man could avoid entering the struggle to find purpose for himself within his own life. But the complaints about the low quality of psychic life prevalent today tend to negate the case for *a priori* "purpose." Rather, the middle-class existential neurosis appears to be approaching the classless pervasiveness of the common cold.

This paper explores the possibility that goals set for a college or university, say, to produce certain kinds of students, to increase and transmit knowledge, to serve the community, to produce types of trained professionals, or to be a certain size, may actually be a deterrent to the necessary growth and development of its constituents as well as to the effective functioning of the institution. For, in setting such goals for a college or a university, goals are set, perforce, for those who come to it. But struggling to achieve externally imposed goals may be the crucial inhibiting factor in the higher educational experience!

The real struggle for any individual, and one that is probably never more pronounced than at college age, is to know oneself, that is, to know what one is interested in and what one is not, what one likes and what one seeks to avoid, what are one's capabilities, one's limits, and one's weaknesses. More specifically, perhaps, the struggle is to find the depths of one's ability to create and produce on one's own, to trust one's own visceral and intellectual responses, or, more simply, the degree to which one can truly be oneself and reveal and trust that self. To find out that within oneself is an inclination and capacity to order one's experience, to express one's experience articulately to others, to do meaningful thinking and work, to be good and helpful, and to be experienced as such by others—and to find out the conditions under which these inclinations and capacities are best able to be expressed—discovering these things about oneself is to truly be involved in the process of education.

Education is for persons, not for serving goals set for the university as an institution, though the university can be well served by the pursuits of individuals. Education is for those who seek it, not for the service of the larger society, though society will indeed be served since college students are essentially preparing themselves for entrance into adult society. The need to be in society and acknowledged and accepted by its members has been well documented by Fromm, Adler, Reisman, and others. In particular, from David Reisman: "If people are not alienated, if they are not discouraged from being committed, if they are allowed to remain human, they will respond to the needs of society."[4] Paul Goodman makes an even more emphatic connection between education and social needs when he says that "education is motivated through and through by social needs," and that "culturally, there *are* no non-social needs." He points out that the professions require licenses, that skills can be sold, and that rhetoric and dialectic are learned for leadership. But he thinks it critical that the scholars use the schools to learn or teach what they want to know or profess, rather than that society use the schools to train youth for its needs. For when the social needs exist as the goals of the school's administration, the complications of motivating, disciplining, and evaluating the students is added. It is quite a different story, however, when students who want to be doctors or lawyers find themselves a faculty, or when they

are attracted by a master with something to profess; then the goals are implicit and motivation is not a problem.[5]

A final point on self-goals and their relation to fulfilling societal needs: If students, and youth in general, are given more of an opportunity to *be* what they value and to *do* what is an expression of themselves, they can enter the society-at-large in a way that doesn't compromise the values and aspirations with which they identify themselves. An individual who merely *adopts* the values of his society, rather than developing his own in relation to it, is not a creative contributor to the growth needs of his society; he merely maintains himself within it.

It seems apparent that there exists in adult society a general distrust that individuals could really have *within themselves* the inclinations and capacities to grow and develop, and to learn and produce in a positive and contributing way. As a result of this lack of trust, our educational institutions operate too much on the basis that the constituents must be directed, induced, watched and evaluated, and, in essence, have goals and objectives set for them.

How can this attitude be changed? On what can be based a trust in the inherent tendency and capacity of the individual to accomplish on his own what is now attempted primarily by external manipulation? And what is inimical about externally imposed goals to the very process by which an individual does grow and develop?

Many scholars have addressed themselves to the basic tendencies of the human organism. Carl Rogers believes that "the organism has one basic tendency and striving—to actualize, maintain, and enhance the experiencing organism."[6] He quotes similar propositions: by Sullivan, "The basic direction of the organism is forward"; by Mowrer and Kluckhohn, "The basic tendency of living things [is] to function in such a way as to preserve and increase integration"; and, more vividly, by Horney as she experienced it in therapy, "The ultimate driving force is the person's unrelenting will to come to grips with himself, a wish to grow and to leave nothing untouched that prevents growth." And basic to the questions raised are Abraham Maslow's propositions regarding human nature and self-actualization, drawn from a humanistic psychology, that is, a psychology of the total person as a healthy person:

> We have, each one of us, an essential inner nature which is intrinsic, given, "natural" and, usually, very resistant to change. . .
>
> This inner core, even though it is biologically based and instinctoid, is weak rather than strong. It is easily overcome, suppressed or repressed. It may even be killed off permanently. Humans no longer have instincts in the animal sense—powerful, unmistakable inner voices which tell them unequivocally what to do, when, where, how and with whom. All that we have left are instinct-remnants. And furthermore, these are weak, subtle and delicate, very easily drowned out by learning, by cultural expectations, by fear, by disapproval, etc. They are *hard* to know rather than easy. Authentic selfhood can be defined in part as being able to hear these impulse voices within oneself, i.e., to know what one really wants or does not want, what one is fit for and what one is *not* fit for, etc.[7]

Note how our impulse-voices are "hard to know rather than easy." They are "weak, subtle and delicate, very easily drowned out," and are possibly the least honored aspects of the individual as child, as student, and as learner in general.

It would seem that the individual as student has a very considerable task merely to hear these impulse-voices, and a strong barrier to hearing them would be the goals and expectations imposed upon the individual by others and by the societal institutions that do so in some hoped-for service to society, but, as suggested earlier, merely serve to maintain the society as it has been. This limitation has also been recognized by Reisman: "The successful academic guild tends to encourage the reproduction of itself, the training of its own stereotype, and the consequent limitation of its continued growth and development."[8]

One of the most persuasive recommendations for faith in the human potential and for freedom from extrinsic goals comes from the work of Rogers. His over forty years of practice and his extensive research in both education and counseling psychology have emphasized process over product. Like Maslow, he has espoused a theory of personality which has been described as centering upon "a conception of the person as an organized whole, striving to actualize himself in continuing interaction with the environment and in pursuit of goal-values."[9] Rogers talks about letting his experience carry him forward, with only dimly perceived goals, goals sort of being realized after the fact. He would be moving forward in a direction long before he could give a conscious and rational base for it. He says in effect that what one would be tomorrow is a consequence of today's experiences and cannot be predicted in advance by oneself or by others. He describes the fluidity present in such existential living:

> The self and personality would emerge *from* experience, rather than experience being translated or twisted to fit a preconceived self-structure. It means that one becomes a participant in and an observer of the ongoing process of organismic experience, rather than being in control of it. . .
>
> Such living in the moment, then, means an absence of rigidity, of tight organization, of the imposition of structure on experience. It means instead a maximum adaptability, a discovery of structure *in* experience, a flowing, changing organization of self and personality.[10]

Rogers' insistence that the full functioning of the individual is best enhanced by a minimizing of structure and a maximizing of trusting the experiencing organism is based on the following view of human nature:

> The basic nature of the human being, when functioning freely, is constructive and trustworthy . . . his reactions may be trusted to be positive, forward-moving, constructive. We do not need to ask who will socialize him, for one of his deepest needs is for affiliation with and communication with others . . . Man's behavior is exquisitely rational, moving with subtle and ordered complexity towards goals his

> organism is endeavoring to achieve. The tragedy for most of us is that our defenses keep us from being aware of this rationality, so that consciously we are moving in one direction, while organismically we are moving in another.[11]

In short, the major task of the individual, the college student in particular, is to know himself. And this knowing is comprised of finding what is of interest to him, how he can most rewardingly relate to the world about him, what he is actually capable of doing and what particular aspect of that doing might best be an expression of the part of him that he values sharing with the world. Knowing oneself would also include being in intimate touch with natural proclivities to create, to produce, to be helpful, to be courageous, and so on, as well as with the opposing aspects of those tendencies. It would include knowing the contexts that yield the kind of growth and development best suited for oneself, and ultimately, how to create those contexts for oneself.

It is essential to know that the individual can be trusted to try to move in a forward, positive direction, to try and develop his abilities and potentials, and to try to do so in a manner that will allow him to be a part of and contribute to the larger society. And, important to both the task and the trust is the realization that the process is indeed a delicate one, one in which it is necessary for the individual to primarily be listening to his own experiencing self as he selects this avenue and then that path, discarding what seems irrelevant and unproductive, and coming to know truly which are the environmental processes and contexts that yield for him the results that he values.

It seems clear that these kinds of learnings are not in any way enhanced by a student's entering an institution of higher education and finding that he must learn these particular subjects or that he must follow that particular path. The very crux of the education of the person, from this point of view, lies in the individual's getting-in-touch with his own free choices and, importantly, their ramifications for himself and others. But if a student's choices are subordinate to goals set by others for him, he is not free to use educational situations to the fullest extent for his own learnings. Of course, one can learn about oneself even when meeting the goals of others, but this kind of learning is seen to be incidental and after-the-fact. It soon becomes less and less valued in as much as it doesn't yield enough for the individual caught in the web of continually meeting others' goals.

The intriguing question is why goal-oriented educational systems have persisted so long in the face of an incredible amount of negative reaction. Experience suggests that they are perpetuated mainly out of fear—a fear that pervades at *all* levels: students, faculty, and administrative alike. The attitude that the individual cannot take responsibility for his own learning seems to have maintained because of the threat involved to those who might enter such a process. Learning, that is, significant learning that actually changes our behavior, says Rogers, "is threatening and tends to be resisted."[12] Thus, the educational obsession with externals: exams, grades, curriculum, degrees, dissertations, rankings, research, publications, and tenure.

What this fear can be for students, and why they might readily turn away from addressing it within themselves is dramatically illustrated by Judson Jerome as he reacts to some of the experimental colleges he has observed:

> Young people are not prepared by their home lives or schools to make decisions about themselves, and often are incapable of discovering within themselves the grounds for order, discipline, direction and purpose. They have dreamt of what they would do if it weren't for the limits and demands imposed upon them; but when they are free they are likely to unzip and find nothing inside. If you believe you would be creative, industrious and productive except for external restraints you can retain some hold on dignity, though you feel continually frustrated. But if you discover that you do not in fact spontaneously create—or even read—that you are not really very interested in cultural or political events, in ideas, in intellectual issues, that you have little drive to achieve, that there is nothing in particular that you want to do with your life, and that you cannot blame these things you perceive as deficiencies upon some system beyond your control, you are likely to suffer waves of guilt, self-hatred, and paralysis of will.[13]

But the confrontation of this emptiness, of the unactualized potentials of creativity and achievement, of direction and discipline, is exactly what the education of the person is all about. For educators, and here we include both faculty and administration, the fear in participating in this process is of the same order that it is for the students. To allow the process of self-direction to unfold in those who come to you, to in fact allow the students to direct their own learning, to freely decide what to go towards (classes, courses, professors, programs, activities), to judge for themselves what has value—to allow this, the educator must relinquish his unilateral control of what has worth in subject matter, in programming, in whatever he offers. The student "customer" would have substantial but not dominant weight in shaping the educational environment, since the educators control what they are able and willing to offer. The threat in all this is the same unzipping and finding nothing inside that confronts the students. If an educator has always been convinced of the absolute worth of some subject matter, of some methodology, of research, of this degree program or of that one, and if, in an open educational market, he finds that he has few or no buyers for the academic commodity with which he has always identified himself, he can very well experience a great uncertainty that he does indeed have anything to contribute, to offer, to "sell," or that he has the capacity to change enough so that he might.

But "to learn is to change," says George Leonard, with education being that process of change.[14] What better model might students have than teachers who are changing, who are reaching deep inside themselves finding their own new directions and are renewing their own creativity and productivity as they respond continually in new and more total ways to the reciprocal aspects emerging in their students.

The obvious concern for the university, when faced with the idea that it should not have goals of its own, is that

it will flounder like the proverbial ship without a rudder. But a ship *with a rudder* still does not have goals of its own. It serves the purposes of those aboard. What a ship does have, which becomes apparent when it is in operation, is a direction. The direction of our eudcational ships seems to have been towards being all things to all people. But perhaps this is what the hue and cry is all about. One of the basic premises of our society has been an education for as many as possible. Out of the educational process have come the transmission of knowledge, the initiation of new knowledge, the supply of skilled and professional people. Originally education was an end in itself, out of which these valuable secondary ends accrued. Nowadays the shift is in the direction of the secondary ends, with the educational process itself becoming merely a means to those ends, which includes faculty and students being seen as means—much to their dissatisfaction.

Thus it seems that the time has come for the university to redirect itself towards the educational process and not towards outputs. The direction and character of any institution will then emerge as it addresses itself to understanding how it might best serve in the realization and the achievement of the individual self-goals of those who come to it. Once a university has established such a direction and understands how it can be an effective educational environment, it can better allow its constituents to follow their own values and pursue their own goals without hurting the university.

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[9] Floyd W. Matson, ed., *Being, Becoming and Behavior* (New York: George Braziller, 1967), p. 220.

[10] Carl Rogers, *Freedom to Learn* (Columbus, Ohio: Chas. E. Merrill, 1969), p. 285.

[11] *Ibid.*, pp. 290-291.

[12] *Ibid.*, P. 159.

[13] Judson Jerome, "Portrait of Three Experiments," *Change Magazine*, July/August, 1970, p. 48.

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LEVELS OF REVIEW AUTHORITY IN THE ACADEMIC DECISION-MAKING PROCESS

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In a previous study (*The Confidence Crisis*, with Paul L. Dressel and Phillip M. Marcus) the authors found contrasting views between administrators and departments as to priorities. Dissatisfactions were found on both sides with communications, internal and external relationships and involvement in the decision-making process.

The purpose of this paper is to report on the current study of university organization (being conducted by the same authors and supported by the ESSO Education Foundation) relating to involvement in the decision-making process at various administrative levels.

We believe that departments in many universities are out of control, that they have forced the hand of the university to the point where there is no flexibility nor power left centrally for planning. Put simply, when each man clutches his own sandbag the pilot of the balloon may be forced to throw out the wrong ballast.

The department remains a focus of our concern because it is the operating unit in the university where most of the instruction, research and some of the service continues to be done. What we are really looking for are patterns of reorganization and patterns of resource seeking. We are tracing allocations which are based upon definite plans and upon statements of the role individual institutions play in fulfillment of the plan. We are examining accountability in the use of any resources granted.

DEPARTMENTAL AUTONOMY

All departments initiate certain actions, including among other things: acquiring external funds; contracting with outside agencies; expending university funds; hiring and firing faculty and staff; establishing wages, hours and working conditions for faculty and staff; admitting students to university programs and courses; offering university courses, scheduling classes, and establishing joint programs with other departments; instructing non-university students; granting degrees; and engaging in research activities. If departments are unrestricted by a review authority as they perform these functions, they are said to have total and complete autonomy. Less than total autonomy is a result of review, both formal and informal, that limits at different levels the autonomy of departments. Some agents of review include: students who select courses and evaluate instructors; faculty who serve on various university committees; college officers through the budget; academic administration; governing boards; state systems of control; boards of education; state budget bureaus; legislatures; accrediting societies; professional associations; federal agencies; citizens and parents.

This study is designed to establish some rational grounds for limiting the level of review and degree of autonomy of departmental actions. The rationale includes considerations of equality, efficiency, objectivity, and compatibility, or the suitability of functions to university goals and purposes. Consideration is given to constraints which exist at various levels in the review process. These include legal, administrative, historical, pyschological, political, sociological and economic conditions.

To accomplish the purpose of this study, a questionnaire has been designed which lists 34 actions a department might take. An evaluation by selected administrators and faculty is being made to establish an appropriate level and kind of review for specific actions. The kind of review ranges from "courtesy information" to "authority to veto".

Once the review process is established, measures of autonomy will be taken for traditionally organized universities and contrasted with non-traditional organizations such as those found at the University of Oklahoma, Buffalo, West Florida, Green Bay, Santa Cruz, College of the Pacific, Columbia, NYU, Ohio State, or Nebraska.

The results of the study will indicate the degree to which various organizational patterns influence the review process and authority to review. Hopefully, this analysis will indicate the degree to which various organizational patterns result in different decision-making processes.

PATTERNS FOR CONTROL

There appear to be three categories operative in bringing about control. The first involves state coordination at one level; some super-governing board makes role assignments of institutions, approves new programs and acts on budgets. Thus, the super-board limits the autonomy of departments by denying a given institution the opportunity of moving into graduate programs in particular disciplines. At a state control or coordination level it is also possible that those scrutinizing institutional budget requests may go so far as to raise questions about departmental allotments and cut back the total budget request because some of these seem to be out of line. At a level below state coordination there is system coordination found at the University of Wisconsin which includes several branches. Over the whole University there is a president and a number of other administrative officers and then there is a chancellor on each of the campuses. The system administration conceivably can, by its review of budget and by its budgetary procedures, seek to control some aspects of departmental operations. We are looking at these to see how they limit departmental autonomy. We are including some examples, such as the University of Illinois which constitutes a system but also has a State Board of Higher Education.

A second move which affects autonomy of departments is found in reorganizations within institutions or in the

organization of new institutions. Often, this goes in the direction of trying to separate the several functions normally carried on by departments and provide other units with those assignments. Thus, the cluster college for undergraduate education has a faculty which, for at least the time assigned to the college, is solely concerned with the undergraduate college and is clearly responsible for the undergraduate teaching function. Other institutions have separated graduate and undergraduate instruction into separate departments. To some extent, New York University and the City University of New York are examples of this pattern. The development of institutes and centers is another way, particularly for applied research, interdisciplinary research, and service activities, to limit departmental autonomy by establishing separate budgets and faculty.

A third approach to bringing departmental excesses into a balance with institutional goals and planning is through budgeting and management procedures. This may involve the installation of a unitary management data system in which extensive data are collected and used to determine just how resources are utilized at the departmental level and what kinds of outcomes result from the resources allotted. This may take the form of program budgeting which could utilize as programs categories very close to the functions described above. Another rubric which is used is that of cost benefit analysis. It is not yet clear what functional limits this places on departments since some states are insisting upon a program budgeting approach, but the universities put their requests in this form without actually demanding any different kind of programs from departments nor any change in actual operation.

A SUGGESTED BALANCE OF AUTONOMY AND SAFEGUARDS

It is our belief that the governance and administration of institutions are near breakdown because of committee structures and vested interests. Institutions are incapable of taking the larger view of a system in which each is only a part. They have become self-serving rather than servants of society. Adversary bargaining at all levels is altogether likely to enforce more uniformity and to raise issues which must be resolved beyond the institutional level.

The appropriate alternative certainly is not to let the legislature and the courts run the university, although this will happen if institutions do not find a better alternative. Restoration of the pattern of completely autonomous individual institutions competing for scarce resources and biting the hand that feeds them is certainly not going to be accepted by the legislatures. One alternative seems to be to introduce a new level of coordination and control. We believe that it may be possible to do this in such a manner as to safeguard a reasonable degree of autonomy on the part of individual institutions. There are several things that those of us who share the concern of higher education must do. First of all, we need to plan on a much broader base at the state, regional or even national level. Institutional roles, programs and numbers of students within these programs must be specified. Unless this is done, institutions not only aspire to new programs but compete for students anticipating that the rapidly growing enrollment will force the hand of the legislature in respect to funding, despite the drop in quality in the meantime. To put it another way, when planning the allocation of resources, one must consider commitments to institutional roles. This may force us to regard the faculty of the several state institutions as a composite faculty who can be reallocated as changing demands dictate, or as increasing competency of individual faculty makes possible.

Second, we must develop an auditable system of information which can be used to determine how resources are spent and what results are obtained. Our conviction is that this system of information must be defined at a supra-campus level, and it must be so defined that it is verifiable; for time and again it has been demonstrated that individual campuses modify data definitions, substitute their own, or even manipulate data to gain advantage in the advocate bargaining that takes place when each participant views himself as competing with the others for the same resources.

Third, there must be complete control over the addition of any new program in state institutions. This means that there needs to be a careful review of the resources and the quality of the faculty and facilities before a program is approved. Faculty and administrator advocates on single campuses aspiring to move ahead simply cannot be expected to give a balanced picture of their readiness or competencies for an extention of programs nor can they assess the total additional resources needed to develop that program. The practice of robbing existing programs to start new ones can be stopped if new program approval is contingent upon additional line item appropriations for some specified period of time. Such special appropriations for new programs need to be folded into the budget once the program is fully operative. As a part of this resource allocation planning, existing program operation should be reviewed. If it is evident that an institution is presently not using its resources wisely, then it should be required to improve its resource utilization before any new programs and new resources are added.

Fourth, since individual campuses have indicated a limited capacity to eliminate programs duplicated in other institutions, it seems essential that an agency over all state institutions be authorized to review and recommend budgetary decisions which would enforce the elimination of duplicative programs.

Fifth, the trend within faculties toward decreased teaching load and extensive involvement in a wide range of other activities often unrelated to campus goals suggests the need for a state-wide specification of productivity levels on an average basis. It would be completely inappropriate to dictate a load for each faculty member, but surely some type of productivity level for a campus or for types of departments could be arrived at and enforced. If this cannot be done by an agency sympathetic to the problems of higher education, yet with enough authority to overcome campus irresponsibility, then the experience of Michigan and other states may be that the legislature will reluctantly undertake the job.

Sixth, in recent years, rapid promotion and the granting of tenure have resulted in many departments becoming almost completely inflexible, except as new positions are authorized or individuals resign or pass away. Some distribution by rank and some limitation on the percentage of tenure are probably reasonable courses of action for a state coordinating or control board. With such restrictions, promotion policies and salary policies will be under better control and some element of flexibility will be retained so that adjustments can be made to reductions in resources, the changing role of institutions, changing demands in the state, and the like.

Seventh, there must be a development of some patterns for the utilization of private institutions. It makes no sense at all for state institutions to try to duplicate programs already available in nearby private institutions. The problem must be looked at in terms of the total costs to the individual and to the state, and some resolution of the matter must be reached in such a way that everyone has an opportunity for education at the same cost. There will still be those who deliberately select higher cost private institutions. For example, in Oklahoma the court upheld the State Board of Regents in a decision that state-supported institutions could not compete with the University of Tulsa in offering certain advanced courses required for teachers. While the decision indicates and appropriate possibility with regard to cooperation with private institutions, the problem remains of how one adjusts the difference in costs between the fees paid by the individual at a private institution as compared with a public institution.

Eighth, there needs to be a clearing house on facilities, programs, resources, and personnel to facilitate cooperation among institutions. Various types of consortia may be developed in regions of the state whereby resources are pooled and better education becomes more readily available without marked increase in costs. To accomplish this, artificial rules imposed by institutions on transfer of credits must be liberalized if not eliminated. Except for internship experiences and possibly certain types of research which required the supervision of a faculty member, residential requirements will become a vestige of an earlier day when the institution attended was more important than the degree received. In this regard, duplication of resources in the offering of extension courses demands attention. Partly because of the limitation on transfer of credits, partly because of the feeling that offering courses at a distance somehow adds an awareness and hence a political wedge on the part of the institution, numbers of persons travel major distances to offer on the same evening and in the same facilities identical courses taken by different individuals paying different fee schedules and working for degrees in different institutions. Perhaps at the state level there can be some coordination of this type of extension and continuing education activity.

Ninth, the crises facing us today are created by resources demands in people and in dollars far beyond those now appropriated. Most universities have retrenched by drawing back from new problem areas, and only partly because of funding problems. On the other hand, if every institution had to find the funds and all tried to move at once, the approach would be uneconomical. Clearly there is a need for setting up one or more institutes, center, or facilities at a state level where the resources of the several universities can be pooled to make a major attack on the research needs and the service activities of some of the social and economic problems faced by a state.

Tenth, it has been noted that state boundaries are really only historical artifacts as far as higher education is concerned. This is particularly evident in the case of state institutions close to the boundaries of the state. Illinois has already exhibited some vision in this area by supporting the Quad Cities cooperative development between Iowa and Illinois and involving both private and public institutions. More of this collaboration with adjacent states needs to be developed. Surely not every graduate program or professional program needs to be developed in every state. The total number of graduate schools demanded in the country probably would not exceed one hundred if plans were worked out carefully, but single institutions simply will not enter into these kinds of negotiations for fear of delimiting their own development, and they are not in a position to make the kind of commitments which might be demanded. The legislature and governor, on the other hand, have limited tenure and are usually so concerned with solving immediate problems that the long-term view is impossible for them. Again what is required is a state agency that can work with other similar agencies in other states to resolve some of these matters—perhaps in the patterns which have been developed in WICHE and SREB.

To the administrator and faculty member accustomed to the autonomy of the individual campus and to the opportunistic and competitive approach which has been so long characteristic of the university, our recommendations constitute a major threat. Though that threat is interpreted as a threat to autonomy and therefore to quality, the real threat is to the aspirations of the individuals and the institution. The luxury of autonomy for individual institutions can no longer be tolerated. It was appropriate, perhaps, to an earlier day when the development of higher education was still in its adolescence and when we were concerned with the establishment of various types of institutions, when the numbers were not large and the education could be limited to the elite. In the present day, higher education has to be regarded as a state and a national resource, and it must be coordinated and controlled in such a manner as to fulfill the needs of society. Equity does not require that every institution of higher education take students to all types. State mental hospitals and penitentiaries certainly have selective admissions, and they do not let individuals do their own thing once admitted. It is appropriate, then, at the state level to decide on institutional roles and to exert enough controls to insure that these roles are followed. It is appropriate also to demand that institutions engage themselves with the problems of the units from which they receive support, and when, as now appears to be the case, the problems transcend the abilities of single institutions, new units may need to be created and supported to resolve them.

WHEN WOMEN'S LIB LOOKS AT YOUR FACULTY. . .

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Colleges and universities have discovered in the past year that sex discrimination has become a major issue. The Civil Rights Act of 1964, Title VII, specifically exempted educational institutions from its sex discrimination protection, but women's groups found that Executive Order No. 11375 could be used to back their complaints against educational institutions. This order stipulated that a Federal contract holder cannot discriminate on the basis of sex, in addition to the usual grounds of race, color, creed, and national origin. The order stated that affirmative action must be taken to insure that the contractor is not discriminatory in treatment during employment, as well as in initial hiring practices.[1]

Several institutions of higher education have felt the direct results of the presence of women's rights groups. Among the most frequent charges contained in the complaints filed against the institutions are that women are hired for academic positions less frequently, women are promoted less rapidly, and that women students are subject to higher admission standards than men. Women's groups have charged that policies of nepotism frequently result in qualified women either being refused jobs or being forced to take lower positions than those for which they would normally qualify.

The response of the Department of Health, Education and Welfare (HEW) varies from one institution to another. Generally, however, the regiona' HEW office sends an investigating team to a campus and requests detailed data concerning admission policies, numbers and percentages of women employed in various departments throughout the institution, and records of faculty salaries and promotions. After the HEW team gathers information from women's groups, other employees, and administrators, the institution may be told to make certain improvements and be asked to submit a plan outlining what affirmative action it will take to insure equal employment opportunities for women.

If the institution's plan is considered unacceptable, it is put under "control" and no Federal contract can be awarded until a plan is agreed upon and the "control" removed. Most institutions are extremely reluctant to discuss whether any of their contracts are being withheld, but it is generally known that the University of Michigan had approximately $7.5 million in contracts held up while it was negotiating an acceptable plan with HEW.[2]

Claims of sex-based pay inequities provide yet another crisis situation for the already beleaguered college or university administrator. Data must be provided and plans for taking appropriate action must be made within a short period of time. Figures can be readily amassed showing less women on college and university faculties and that women faculty members are paid less at each academic rank. At this point the common questions or defenses are: "But are the women as well qualified as the men? But are the women as productive as the men? Have the women been at the university as long as the men? Do the women work as hard as the men?"

Before any attempt can be made to correct pay inequities, more and better information must be assembled concerning the actual existence of an inequity. Can the differences in salaries between men and women be explained by reasons other than sex-bias? What can be done to provide meaningful and relevant statistics in a short period of time? This paper illustrates one approach to drawing meaning from data which is already available.

Dual purposes are served by this presentation. Results of the analysis of patterns at one large university are reported; in addition, a method of approach is illustrated which is applicable to many other situations. The approach can be easily modified to look at other aspects of sex discrimination by the substitution of appropriate dependent (criterion) and independent (predictor) variables. Furthermore, the same technique may be applied to other situations where discrimination is alleged to exist. Variations of this multiple regression technique can also be applied to an infinite number of other decision-making situations.

A center which is responsible for developing programs of continuing education for women has already circulated a study which indicated that the overall women's median salary was 32% less than the median salary for men. The purpose of this study was not to refute that figure, but to provide data concerning the relationship of salaries to other factors of the individual's academic preparation and performance.

METHOD

Data for this study were already available. Salary data were provided by the university payroll system. A study of faculty activity had been conducted which provided information about the distribution of the faculty member's load. Information about an individual's academic preparation, experience, and other personal data were obtained from a faculty information form which is completed by each faculty member.

The original population was the entire academic staff for whom all three sources of data were available. Approximately 13 percent of the 1,591 faculty in this original group were women. In order to make valid comparisons, all faculty were eliminated who could not be matched with someone of the opposite sex who held the same rank in the same department. Since many departments do not have both men and women faculty, and those that employ both sexes may not have men and women at the same rank, only men and women holding comparable positions were included. This matching procedure yielded a group of 487 faculty of whom 129 (26%) were women.

A stepwise multiple regression procedure was used to determine which combination of variables would most accurately predict salary. This process allows the investigator to determine the degree to which salaries are a function of the work patterns, personal characteristics, and academic experience and preparation for the 487 subjects who had been matched by rank and department.

Description of Predictor Variables

Potential predictors of salary which were available from the faculty information form were present rank, sex, initial rank, number of years at the university, number of years since last promotion, marital status, and whether the faculty member holds an administrative title, a doctorate, and whether the highest degree was granted by this university. The faculty activity study yielded data about the hours devoted each week to instruction, research, scholarly and creative activities, consultation—both with and without extra compensation—professional meetings, committees, administrative functions, and other activities. All categorical predictors, e.g. college and sex, were treated as binary-coded variables indicating membership or non-membership in each category. The interaction of sex and rank was also provided as a group membership vector. A total of 55 continuous and group membership vectors were examined to determine the salary paid.

Limitations

Possibly a major limitation of this study is the absence of data covering each faculty member's research publications and other evidences of professional output. Complete and accurate data were not available, so that measures of faculty output could not be used as predictors.

The specific findings of this study must be limited to only the institution under study. While the technique may be generalized and modified to other colleges and universities, the findings are not generalizable.

RESULTS

Studies have consistently shown that women's salaries are generally lower than men's. Certain comparisons between men and women faculty were already known for the institution under study. An earlier study showed that women's median salaries were nearly one-third less than men's. Analysis of the faculty activity study indicated that the mean hours worked per week by men and women faculty, when matched by rank and department, were almost identical. However, the working patterns for men and women were quite varied. Men devoted much more time to research, while women spent more time in instruction. Faculty in different colleges exhibited quite different work patterns.[3] Differences had also been noted in academic preparation and personal characteristics between men and women faculty members.[4]

Mean salaries (semi-monthly) and differences between sexes for the group of matched subjects are given in Table 1. Male salaries are greater for each rank, with the greatest difference being at the full professor level.

TABLE 1
Mean Semi-Monthly Salaries for Male and Female Faculty Matched for Rank and Department*

Rank	Male	Female	Difference
Professor	$1,003	$889	-$114
Associate Professor	$ 703	$688	-$ 15
Assistant Professor	$ 608	$580	-$ 28
Instructor	$ 498	$467	-$ 31

*358 Males, 129 Females

In order to determine whether the salary differences were attributable to sex-bias or to differences in patterns of preparation and performance, various combinations of the 55 predictor variables were made through a stepwise multiple regression procedure to determine which of those variables were most predictive of the person's salary. Optimum predictability, excluding sex as a predictor, was achieved by using number of years at the university, number of years since last promotion, age, college, hours per week devoted to instruction, hours per week devoted to research, and whether the faculty member holds an administrative title, a doctorate, or whether the highest degree was granted by this university. These variables, used as multiple predictors, account for approximately 65 percent of the salary variance.

At this point, if the introduction of sex as an additional predictor variable significantly increases the proportion of variance which can be accounted for, then differences are found in the salary patterns for men and women and sex-based salary inequities exist. The introduction of sex as a single predictor variable increased the proportion of variance accounted for by only 1 percent and was statistically non-signficant. However, when the interaction of sex and rank was introduced, the accuracy of prediction was significantly increased ($F=38.7$, $df=8,461$) to approximately 79 percent of the total variability in salaries.

These findings indicate that sex-based salary inequities are not found consistently throughout all ranks, but that differences in male and female salary patterns do exist in one or more ranks. Prediction equations were derived for each of the four ranks of male faculty. These equations were then used to compute the expected salary for an hypothetical, average female faculty member of the same rank, where each of the significant predictors is weighted the same as for a male salary. This female faculty salary was computed by using the mean value for women of her rank in the corresponding prediction equation. Table 2 gives the predicted salaries and differences between sexes for each rank.

Table 2 indicates that when women faculty members' salaries are predicted on the same basis as men's, three of the four ranks would still be expected to have salaries lower than men. However, at one rank, assistant professor, women would be expected to receive a slightly higher salary. Female assistant professors in this matched group actually receive a lower salary than their male counterparts but could be expected to receive slightly more. Two other ranks, professor

TABLE 2
Predicted Semi-Monthly Salaries for Hypothetical "Average" Female Faculty*

Rank	Actual Male	Predicted Female	Difference
Professor	$1,003	$942	-$61
Associate Professor	$ 703	$684	-$19
Assistant Professor	$ 608	$626	+$18
Instructor	$ 498	$489	-$ 9

*Significant predictors of salary, used in addition to rank and sex, were number of years at the university, number of years since last promotion, age, college, hours per week devoted to instruction, hours per week devoted to research, and whether the faculty member holds an administrative title, a doctorate, or was awarded his/her highest degree from the university.

and instructor, show that the women faculty members would still be expected to receive lower salaries than their male counterparts, but the expected difference is less than that which actually exists.

Table 3 indicates the actual differences, expected differences, and the changes which would be necessary to bring the women's salaries into accord with their predicted salaries.

TABLE 3
Actual, Predicted, and Change in Salaries of Women Faculty Compared to Men, for Nine-Month Appointments

Rank	Actual Difference	Predicted Difference	Change
Professor	-$2,052	-$1,098	+$954
Associate Professor	-$ 270	-$ 342	-$ 72
Assistant Professor	-$ 504	+$ 324	+$828
Instructor	-$ 558	-$ 162	+$396

Female professors and assistant professors need the largest salary increases to bring them up to their predicted levels. The figures in Table 3 could be used to compute the total number of dollars needed to remove the sex-based salary inequities.

DISCUSSION AND COMMENTS

Results of this Study

The results of this study indicate multiple causes for the lower salaries generally paid to women. On one hand, women faculty holding three of the four ranks investigated would be expected to receive lower salaries than men of the same rank due to differences in background, experience, and working patterns. On the other hand, women of all ranks, except associate professor, would be predicted to have an increase in the salary they presently receive. Women, on the average, would not be expected to receive as high a salary as comparable men in the same department, but they are being paid even less than would be expected.

These conclusions must be limited to the institution under study. No evidence exists that these same findings are, or are not, applicable to any other institution. Other institutions would have to replicate this study to identify the relevant predictors of salary in their own institution and compute the appropriate predicted salaries.

Reaction in Time of Crisis

This paper reports the results of a study conducted at one institution in order to meet a potential crisis situation with relevant data. The administrator in higher education is faced too often with crisis situations in which no data are available to quickly affirm or deny allegations being made. Crisis decisions should not be made on the basis of data which contribute little information about the interrelationships of various factors. Higher education is far too complex to respond to allegations in a manner which isolates the subject of those allegations from other factors. Application of multiple regression techniques is one of the most used procedures for finding interrelationships.

A great strength of the multiple regression approach is the wide applicability of the basic technique. This method provides investigators with techniques that are extremely useful in conceptualizing research problems. The person who desires further information will find that Bottenberg and Ward[5] give a thorough explanation of the general principles for the application of the multiple regression technique in this manner. In the area of sex-based salary inequities, Loeb and Ferber[6] used essentially the same technique to explore the same problem at a different university. Once the basic principles are understood, the multiple regression approach to providing knowledge about relationships among variables is quite easily implemented when accurate data are available. Several generalized multiple regression computer programs are available.

The institutional research office must provide decision-making data which puts the information presented into proper perspective. The institutional research office should anticipate, whenever possible, the need for pertinent data before a crisis develops. Obviously, this anticipation of data needs is not always possible, but creative exploration of interrelated factors within the institution can greatly enhance the quality and strength of policy decisions in times of crisis.

[1] Laws on Sex Discrimination in Employment. Wage and Labor Standards Administration, Women's Bureau, U.S. Department of Labor, 1970.

[2] Cheryl M. Fields, "Federal Probes into Sex Discrimination Provoke Controversy on Campus," *Chronicle of Higher Education*, March 22, 1971.

[3] "Faculty Activity Study, Fall Quarter 1969: Sex Comparisons," unpublished report, Bureau of Institutional Research, University of Minnesota, 1970.

[4] Andrew Huang, "Selected Characteristics of the 1969-70 Full-Time Instructional Staff of the University of Minnesota," unpublished report, Bureau of Institutional Research, University of Minnesota, 1970.

[5] Robert A. Bottenberg and Joe H. Ward, Jr., "Applied Multiple Linear Regression," Technical Report PRL-TDR-63-6, 6570th Personnel Research Laboratory, Lackland Air Force Base.

[6] Jane Loeb and Marianne Ferber, "Sex as Predictive of Salary and Status on a University Faculty," paper presented at the meeting of the National Council on Measurement in Education, New York, February, 1971.

MEETING THE CHALLENGE OF OPEN ADMISSIONS AND MAINTENANCE OF ACADEMIC STANDARDS

W. Sam Adams
Wisconsin State University—Oshkosh

The Wisconsin State University system of higher education consists of nine universities whose primary mission is excellence in undergraduate instruction. WSU—Oshkosh is the largest in the system, enrolling more than 11,000 students. Founded in 1871 as a state normal school, it gradually developed into the present comprehensive institution which was designated a state university in July, 1964. Undergraduate majors and minors at Oshkosh—both in the professions and the liberal arts—are offered through schools of Business Administration, Education, Letters and Science, and Nursing. A graduate school coordinates programs leading to the M.A., M.S.T., M. Ed. and M.B.A.

ADMISSIONS POLICIES AND ACADEMIC QUALITY

Recent evolution of WSU-O admissions policies began in 1966 when lower-quarter high school graduates could "qualify" for regular academic year courses by earning a C (2.0) average in English and history during summer school. Two years later probationary students could be admitted by either scoring 17 or higher on The American College Tests (ACT) or by earning a D+ (1.5) average in English and history in summer school. In 1970, restrictions were further reduced: the admissions policy allowed students not obtaining an ACT composite score of 17 to qualify with a D+ in any six credits of summer college work.

The lowering of admissions standards has allowed many students to attend WSU-O who would have been excluded a decade ago. As might be expected, the freshman class composition has changed consistent with these broadening policies. In 1966 about 29 percent of the freshmen class consisted of lower-half high school graduates; by 1970 the proportion increased to 36 percent. On the ACT exam, the mean class score of entering freshmen has been consistently dropping every year since 1966. While this may be disappointing to the faculty, there are enough high scoring students in the 1970 freshman class to make the WSU-O average ACT score rank at the 74th percentile among some 400 institutions participating in ACT research activities.

INSTITUTIONAL RESEARCH REPORTS AND CURRICULUM CHANGE

Over the past six years, the Testing Research and Services Office has kept the WSU-O faculty and administrators informed of the freshman class' academic and non-academic characteristics through a series of brief institutional reports. The general reaction to these studies has been very favorable, but few persons have initiated curricular reform based on these data.

The latest of these institutional reports, published in January 1971, requested the readers to consider: "Can an institution continue to provide quality academic programs to an increasing number of 'unprepared' students and expect the programs to meet the needs of these students successfully?" The report offered four courses of action:

1. Maintain the status quo—i.e., maintain a liberal admissions policy with a relatively strict grading policy.
2. Ease grading practices to permit a larger percentage of students to graduate.
3. Raise admissions standards so that all students admitted have a relatively high probability of graduating.
4. Provide remedial or compensatory experiences for those students poorly prepared to do college work.

In light of the current trends in higher education to open admissions to minority groups and others who would not qualify by traditional standards, it seems that the fourth alternative is the most logical and acceptable course of action. The City University of New York opened its doors to over 35,000 freshmen last fall; some of these students were barely able to graduate from high school while others received National Merit scholarships. As a result, CUNY found at least half its freshmen needing remedial teaching before they could deal with college-level work.

WSU-O is facing a similar situation, but no concerted effort has been made to meet the needs of a diversified student body. Since the WSU Board of Regents feels that it is important to allow all persons an opportunity to go to college, Wisconsin public universities are going to have to offer programs where most students will have a reasonable chance of academic success.

THE STUDENT GROUP PROFILE

Convinced that the most effective agent in curriculum change is the teacher in the classroom, the WSU-O Testing Research and Services Office set out, two years ago, to give professors information about their classes' academic backgrounds before they began teaching. The primary goal was to provide objective test information to the instructor prior to the typical six week exam period so he could design his course from the beginning more in line with the abilities of his students. The second goal was to make faculty members aware of the diversity of student academic backgrounds in their regular courses so that they would consider developing specific sections of courses in the future which would be suitable to the academic preparation of students.

The Student Group Profile (SGP), sponsored by the Board of Regents, was initiated in summer 1969 to meet these goals. Since then about 60 instructors of lower division classes have received 180 individual course section Profiles of their students each semester. The SGP consists of computer

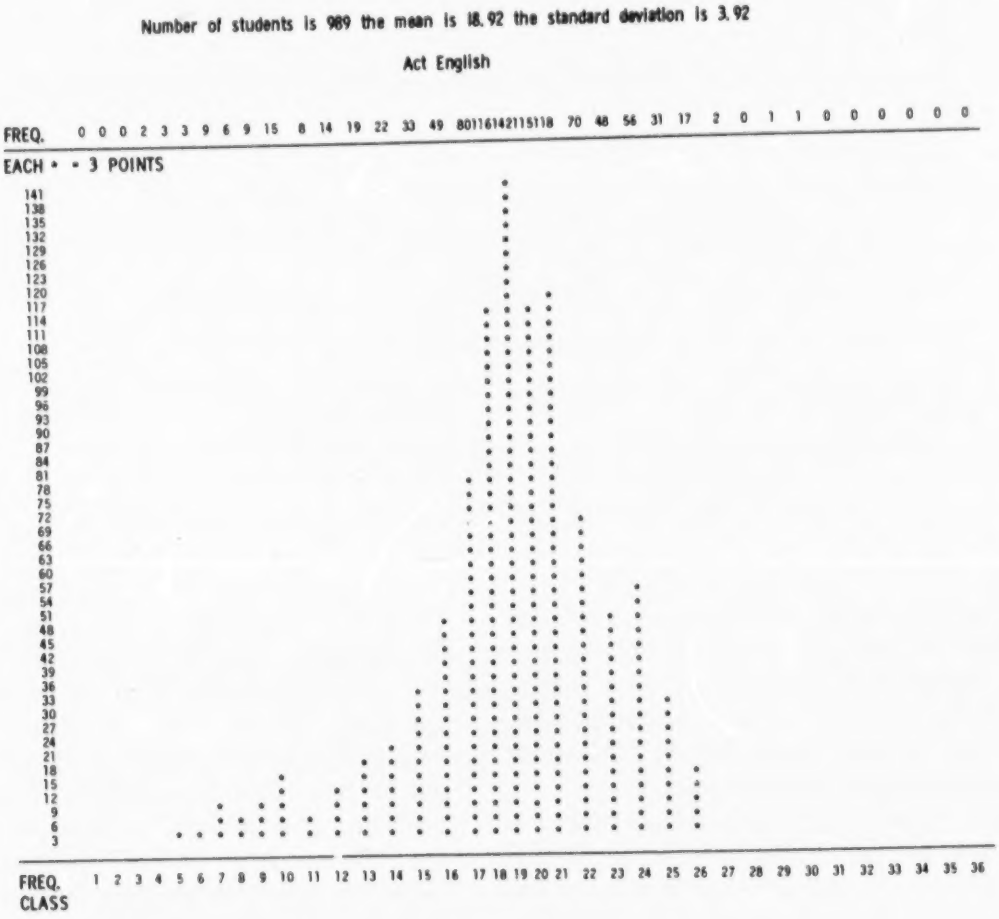
print-outs of student scores on the ACT and the Diagnostic Reading Test (DRT), and student percentile ranks in their high school graduating class (HSR). Each student's academic measurement is represented by an asterisk on a histogram.

The rationale for using ACT and HSR criteria in the SGP is based on the predictive validity of these data with WSU-O grades. ACT composite scores correlate .43 with overall college GPA's while HSR correlates .56 with overall college GPA's. When ACT composite score and high school rank are combined, the correlation coefficient becomes .61 with college grades. The DRT scores while not as predictive of GPA's (r=.32) do provide the teacher with an index of student reading ability.

ACT Criteria

An example (Figure 1) of ACT criteria used for the SGP is the English subtest score distribution of all sections of regular English Composition 101 taught at WSU-O in fall 1970. The standard score range (1-36) is represented on the horizontal axis of the histogram while the vertical axis indicates the frequency of scores. Other ACT criteria used in SGP's are the Mathematics, Social Studies, Natural Sciences subtests and a Composite score which is an average of the four subtests. Interpretative data are presented beneath the histogram in order to show teachers how their classes compared to the WSU-O freshman class and national college-bound norms.[1]

Teachers of regular English 101 receiving a SGP like Figure 1 realize that their students' measured knowledge of English is about as varied as the WSU-O freshman class and college-bound students. It is likely that any one course section would have as much diversity as all the English Composition sections illustrated in Figure 1. This makes it extremely difficult for the teacher to design meaningful



WSU-O comparative data with this class

The following verbal interpretations pertain to your class and WSU-O norms

Your class mean is about the same as the WSU-O mean; that is, the average student in your class scored in the middle range of all freshmen at this institution

Your class range of abilities approximates the freshmen class; that is, your class is quite similar to the WSU-O freshmen class

The following verbal interpretations pertain to your class and national norms

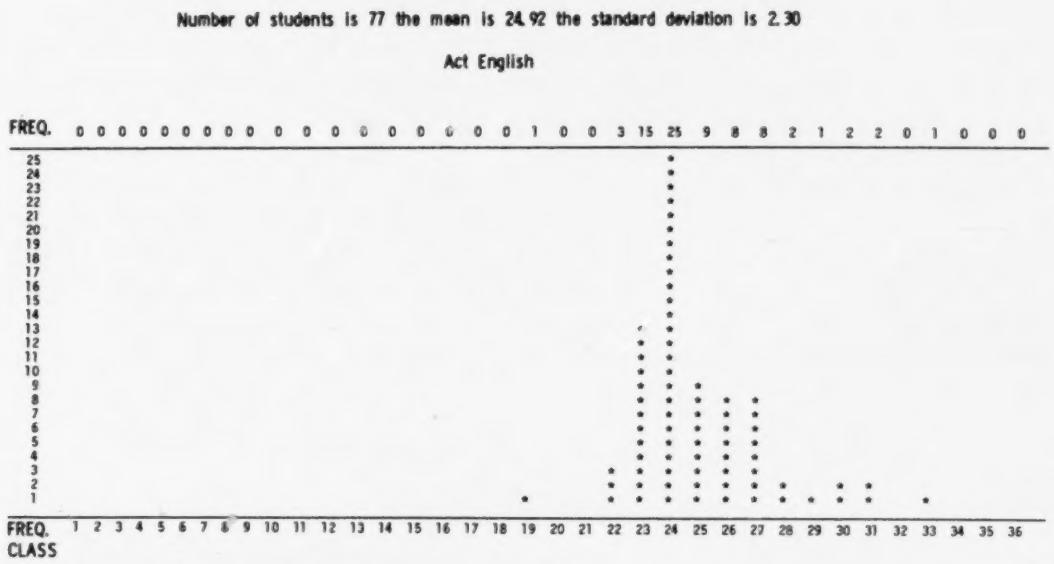
Your class mean is about the same as the national mean; that is, the average student in your class scored in the middle range of all freshmen in the nation

Your class range of abilities approximates the national sample; that is, your class is quite similar to the national freshmen class

Figure 1. English Composition (All Sections)

content and set requirements for students with such distinctly different academic backgrounds.

In contrast to the regular English Composition 101 distribution, Figure 2, Honors English Composition 105 school background in math and who score high on ACT math and a local math placement examination may enroll in an advanced calculus course like Math 263. Figure 4 shows the homogeneity of mathematics skills of students enrolled in



WSU-0 comparative data with this class

The following verbal interpretations pertain to your class and WSU-0 norms

Your class mean is well above the WSU-0 mean; that is, the average student in your class scored in the upper 1/3 of all freshmen at this institution

Your class range of abilities is more homogeneous than the freshmen class

The following verbal interpretations pertain to your class and national norms

Your class mean is well above the national mean; that is, the average student in your class scored in the upper 1/3 of all freshmen in the nation

Your class range of abilities is narrower than those in the national sample; that is, your class is more homogeneous than the national freshmen class

Figure 2. Honors English Composition (All Sections)

shows a more homogeneous class. This is understandable since students are selected for these accelerated classes on the basis of their ACT English scores and high school English grades. With these highly capable students of similar abilities, the teacher can present material which will be challenging and consistent with student needs and backgrounds.

Another example of how ACT-measured abilities and academic competencies are so diversified in a WSU-O freshman class is illustrated in Figure 3. Even though the Mathematics department offers more variety of courses to freshmen than any other academic unit, basic Math 203 draws a wide variety of students. On the ACT math subtest there are a number of students who have the math background for advanced courses but would prefer to get an easy grade in a fundamentals course. In the same class there are those with such minimal preparation in arithmetic they are advised to take an off-campus vocational-technical school math course concurrently with the Math 203 course. Instructors of this course undoubtedly lose touch with students at both extremes, i.e., students at the low end of the continuum cannot keep up with class work while the ones at the high end are not challenged.

However those capable students having a strong high Math 263. The teacher would have little difficulty structuring this course to meet student abilities.

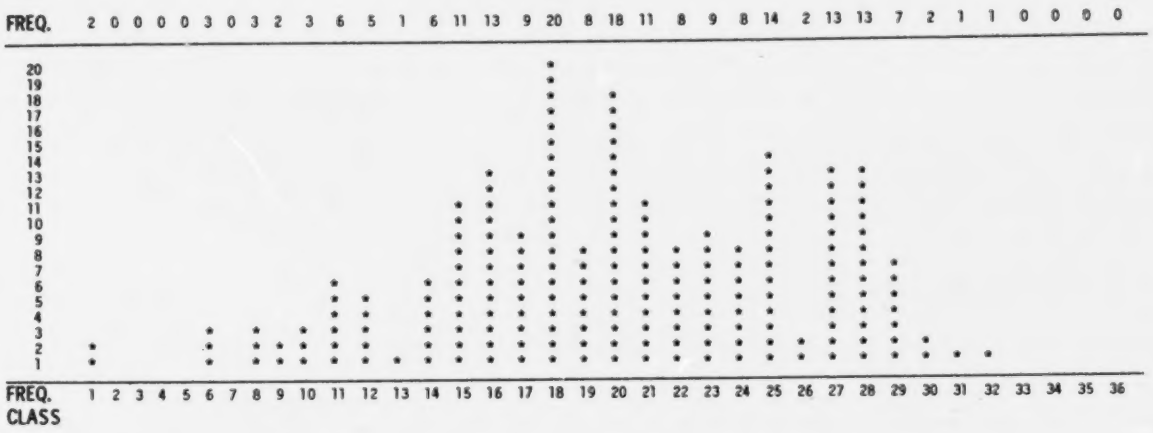
The preceeding SGP's have been examples of normal and high ability class sections. Figure 5 represents a predominately low ability class, i.e., an ACT average social science subtest score which is in the lower third of WSU-O freshman and college-bound students nationally. Although the class is very small, the instructor of this class would have difficulty selecting teaching methods that would reach all students. He would almost have to use independent study under these circumstances.

HSR Criterion

For the HSR criterion, the SGP provides only a distribution of interval points. Figure 6 illustrates the spread of students' HSR's in regular History 101 course sections during fall 1970. In any one class section the professor could find about 15 percent of the students from the lowest quarter of their high school class as well as about 24 percent of the students graduating in the top quarter of their high school class. The teacher of History 101 classes has the problem of losing students at both ends of the distribution with this fantastic range of achievement.

Number of students is 199 the mean is 19.91 the standard deviation is 6.01

Act Mathematics



WSU-O comparative data with this class

The following verbal interpretations pertain to your class and WSU-O norms

Your class mean is about the same as the WSU-O mean; that is, the average student in your class scored in the middle range of all freshmen at this institution

Your class range of abilities approximates the freshmen class; that is, your class is quite similar to the WSU-O freshmen class

The following verbal interpretations pertain to your class and national norms

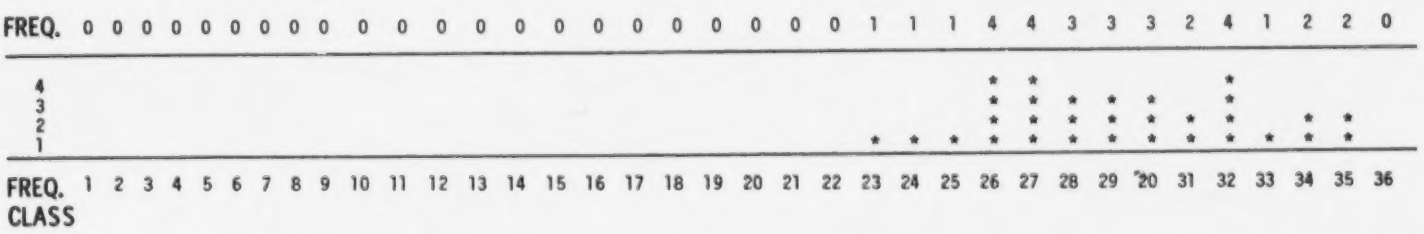
Your class mean is about the same as the national mean; that is, the average student in your class scored in the middle range of all freshmen in the nation

Your class range of abilities approximates the national sample; that is, your class is quite similar to the national freshmen class

Figure 3. Math 203

Number of students is 31 the mean is 29.23 the standard deviation is 3.19

Act Mathematics



WSU-0 comparative data with this class

The following verbal interpretations pertain to your class and WSU-0 norms

Your class mean is well above the WSU-0 mean; that is, the average student in your class scored in the upper 1/3 of all freshmen at this institution

Your class range of abilities is more homogeneous than the freshmen class

The following verbal interpretations pertain to your class and national norms

Your class mean is well above the national mean; that is, the average student in your class scored in the upper 1/3 of all freshmen in the nation

Your class range of abilities is narrower than those in the national sample; that is, your class is more homogeneous than the national freshmen class

Figure 4. Math 263

Number of students is 10 the mean is 14.70 the standard deviation is 6.17

Act Social Science

FREQ.	0	0	0	0	1	0	1	0	0	1	0	0	0	3	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
3														*																					
2														*			*																		
1					*		*			*				*			*							*	*										

FREQ. CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

WSU-O comparative data with this class

The following verbal interpretations pertain to your class and WSU-O norms

Your class mean is well below the WSU-O mean; that is, the average student in your class scored in the lower 1/3 of all freshmen at this institution

Your class range of abilities approximates the freshmen class; that is, your class is quite similar to the WSU-O freshmen class

The following verbal interpretations pertain to your class and national norms

Your class mean is well below the national mean; that is, the average student in your class scored in the lower 1/3 of all freshmen in the nation

Your class range of abilities approximates the national sample; that is, your class is quite similar to the national freshmen class

Figure 5. Earth Science and Man's Environment

Percent Rank In High School

FREQ.	19	18	25	30	40	41	48	41	40	58	52	62	46	53	51	50	60	57	37	15

EACH * = 2 POINTS

62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2

FREQ. CLASS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

Figure 6. History 101

Diagnostic Reading Test Index Criterion

The DRT, a 50 minute test of a student's reading speed, vocabulary and comprehension, is administered to all entering freshmen during summer orientation. The DRT Index is an effective reading score which is a combination of reading speed and comprehension.

To assist SGP instructors in interpreting the DRT Index, the WSU-O Reading-Study Center constructed a conversion table which translates the score into the number of pages the student can read effectively in one hour (Table 1). For example, if the average reading level is 150 WPM for a class, a history instructor could expect the average student in his class to read effectively 12 to 16 pages an hour; the physics teacher could expect most of his students to read between 7 and 10 pages an hour.

The wide spread of reading ability shown in Figure 7 makes it almost impossible for the history teacher to give one reading assignment for the entire class. If he requires of the average student one hour of outside reading for each class attendance, the assignment would be too demanding for some and too easy for others. For example, the class mean (212 WPM) indicates that the average student can read effectively 20 pages an hour. The poor reader would need about three hours to complete the assignment whereas the superior reader could accomplish it in about half an hour.

TABLE 1
Diagnostic Reading Test Index
Conversion Table for Reading Assignments

DRT Index	Number of Pages per Reading-Study Hour	
	General Text (Approx. 375 words per page)	Technical Text (Approx. 600 words per page)
150	12-16	7-10
175	14-18	9-12
200	16-20	10-13
225	18-22	11-15
250	20-24	13-18
275	22-26	14-18

Under these circumstances, some students will be frustrated by not being able to do the assignment while others will not be challenged to extend themselves.

CURRICULAR EXPERIMENTATION

Primarily as a result of their exposure to and use of the SGP, faculty members in several departments plan to

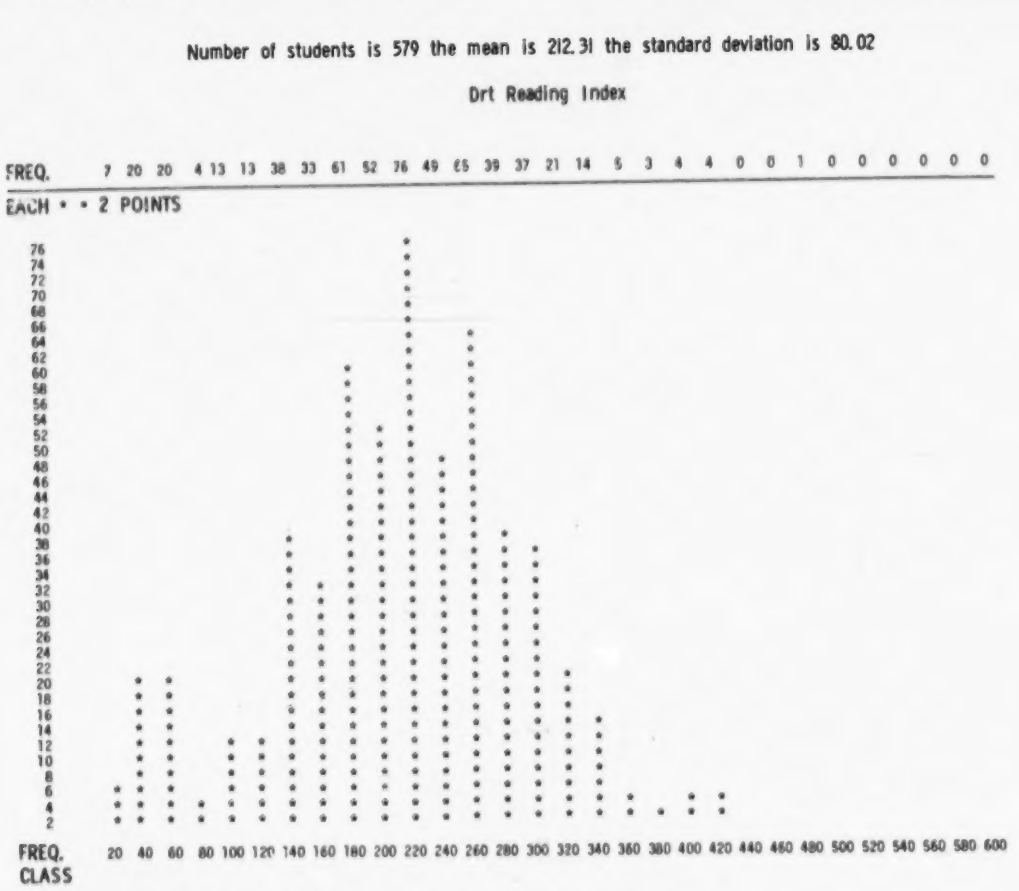

Number of students is 579 the mean is 212.31 the standard deviation is 80.02
Drt Reading Index
FREQ. 7 20 20 4 13 13 38 33 61 52 76 49 65 39 37 21 14 5 3 4 4 0 0 1 0 0 0 0 0 0
EACH • = 2 POINTS
76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2
FREQ. 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560 580 600
CLASS
WSU-O comparative data with this class
The following verbal interpretations pertain to your class and WSU-O norms
Your class mean is about the same as the WSU-O mean; that is, the average student in your class scored in the middle range of all freshmen at this institution
Your class range of abilities approximates the freshmen class; that is, your class is quite similar to the WSU-O freshmen class

Figure 7. History 101

experiment with *voluntary* student grouping and special tutorial laboratories.

The Accounting department will offer sophomores two experimental sections in the fall 1971. Students with less than a 2.0 college GPA, low ACT math, and low ACT composite scores are being encouraged to take a "developmental" accounting section specifically designed to provide special help. Behavioral objectives will be constructed so students will know what is expected of them and what level of competency is required to meet the standards of the course. A senior accounting major will offer a special tutorial laboratory once a week in the evening as well as be an advisor to these students during the day. The developmental class will be limited to 25 rather than the usual 40 students.

An "advanced" accounting section will be the other experimental group offered in the fall. Students qualify for the course by having high college grades (2.75 and above), high ACT math, and high ACT composite scores. Behavioral objectives will be the same as for the "developmental" section, however, "advanced" students may only need to meet twice a week and use their other hour for independent study.

Maintenance of Academic Standards

Common examinations will be used by two instructors participating in the experimental sections. Each teacher will administer the same tests to a "regular" accounting section and to an experimental section to determine whether special treatment improves student academic achievement.

Several other academic departments also plan to modify their regular course sections by adding a tutorial laboratory for students having deficiencies and allowing highly capable students more freedom in attending formal class sessions. No separate ability sections will be developed but teachers will make use of behavioral objectives in designing their courses.

By offering a diverse student population several alternatives to regular course sections and maintaining academic standards, we are attempting to meet the needs of our students as well as assuring potential employers a quality employee.

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[1] Plus or minus one half a S.D. is used to determine if a class' average score is significantly above or below the WSU-O mean and college-bound mean. Homogeneity or heterogeneity designations are stated if a class' S.D. is one half or double the WSU-O S.D. and the college-bound S.D. respectively.

AN ACADEMIC EMERGENCY AND AN EDUCATIONAL EXPERIMENT

RESEARCH RELATED TO THE STUDENT STRIKE, SPRING, 1970

Loring M. Thompson
Northeastern University

What should a faculty member do when confronted by demands to halt traditional teaching and politicise a university? After the Kent State-Cambodia events in early May, 1970, there was no unanimity among the Northeastern faculty members. Assembled as a large body to decide, they first spend much time arguing about how many of them were really faculty members and had a right to be at the meeting. Some proposals related to national politics, others to temporary changes in university regulations. The meeting was broadcast to a gathering crowd in the quadrangle (but was the sound system really working?). The floor was yielded to an emmissary from the outside who gave the impression that the student marshals could no longer control the angry crowd, that riot, bloodshed, and invasion of the faculty meeting were imminent while academicians debated on picayune points or argued who had the right to speak.

Decision was difficult. *There were no guidelines from past experience*; there were only current newspaper reports that other universities had decided to practically forget about further academic work for the rest of the year. This decision was easier at institutions where the year was about over by the first part of May, but at Northeastern the Spring Quarter had hardly passed the half-way point when the Cambodia and Kent State incidents occurred.

After struggling through many intricacies of parliamentary procedure, the Northeastern faculty passed temporary *grading regulations* for the Spring Quarter *which gave students the following options:*

Complete all academic requirements and receive a regular grade;

Complete all academic requirements and receive a grade of "S" (satisfactory) of "I" (incomplete);

Discontinue academic work after May 4 and receive a regular grade based on previous work;

Discontinue academic work after May 4 and receive an "S" or "I" based upon previous work;

Withdraw without prejudice.

When the temporary grading procedures had been published, the author was approached by one of the faculty leaders, a former Vice-Chairman of the Senate (at Northeastern the Chairman of the Senate is the Dean of Faculty and the Vice-Chairman is elected by his fellow senators). "What research are you doing about the current situation? No organized project? Would you like a faculty committee to work with you on some research?" A faculty group was informally assembled to organize the project, including the preparation of a questionnaire to go to all faculty. There were no formal appointments, but the formation of the group was generally known to both the administration and interested faculty.

A prime reason for conducting research during the Spring Quarter was that the response of students to the grading options could not be fully determined from grades submitted to the registrar. This was because students could opt for a regular grade on the work finished prior to May 4th, or they could complete all of the term's work to earn a grade according to the customary pattern. Students could also opt for a "pass" or "incomplete" grade at the beginning of the strike or at the end of the term, even after writing a final examination. The official records would contain only the grades, so that it was necessary to query faculty members as to the work actually performed by the students receiving the grades.

The recorded grades for the Spring Quarter, 1970, are shown by the bar chart in Figure 1 together with the grades

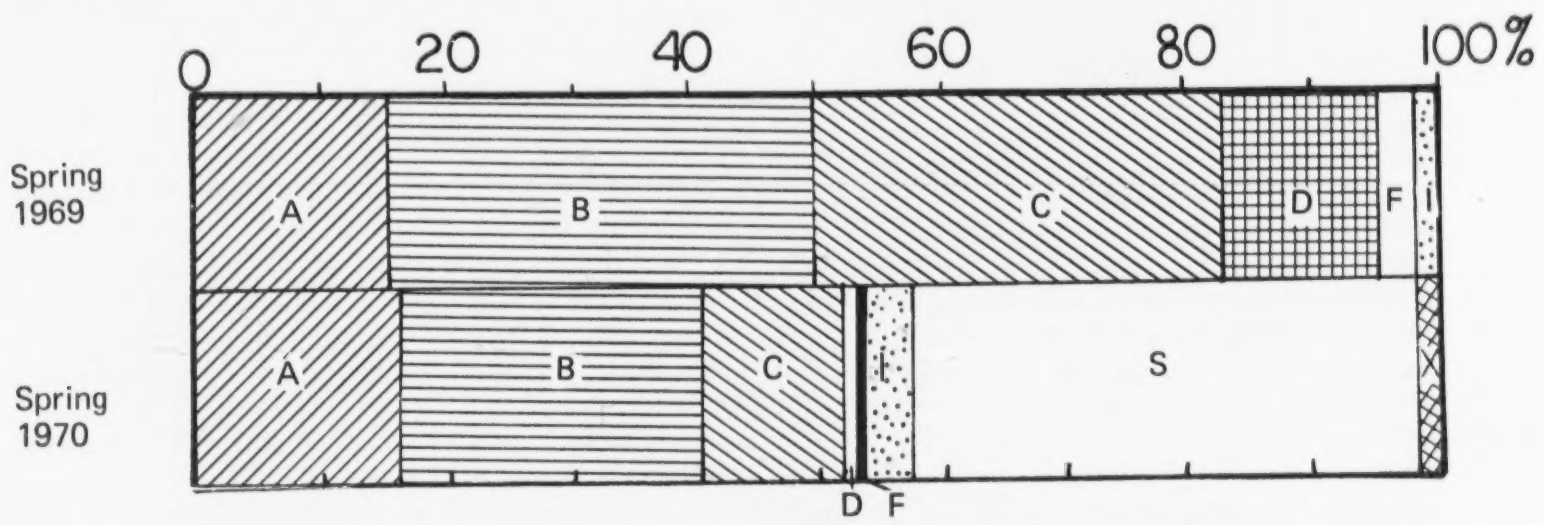

Figure 1. Distribution of Grades

for the Spring Quarter of the previous year as a basis for comparison. As indicated by the chart, the better students apparently went for their "A" and "B" grades, while the poorer students tended toward the "pass" option.

Further interpretation of the chart was provided by answers from the questionnaire which was sent to 675 faculty members and returned by 246. Slightly over half of the students opted for a regular letter grade, and 80% of these completed the work of the entire term to earn the grade. On the other hand, the great majority of the other students opted for a "pass" grades, and over 70% of these took the "pass" grade without even attempting to complete the work for the term. In other words, *about 55% completed the academic work for the term. These were primarily those who would normally earn "A" or "B" grades.* Faculty reports on average class attendance confirmed this, since attendance fell off by about 50% after the strike was called.

Before the survey results were tabulated, many persons on the campus had assumed that it was primarily the liberal arts students who were eager for the strike, and that students in the professional colleges were much more committed to their academic work. The results provided some surprises. *The attendance and grading options selected by students in the larger professional colleges followed the same pattern as in liberal arts.* In one large professional college there was a definite indication of an even lighter commitment to academic work. Students showing the greatest persistence in completing their courses were in a field where state licensing regulations rigidly required continued study.

Although a few graduate students were leaders in the strike activities, the majority of these students remained loyal to their academic endeavors. Of the full-time graduate students, an average of almost 90% completed assigned work for a regular grade. One large professional school was an exception; otherwise the average would have been well above 90%. Northeastern has several thousand part-time, evening graduate students, and in all of its graduate schools over 90% of these students completed assigned academic work for a regular grade.

What portion of the students who reneged on the academic work devoted themselves to the strike activity? The questionnaire attempted unsuccessfully to obtain faculty estimates on this question. Responses from faculty were good with respect to facts they could observe directly, but they refused to speculate on what proportion of their students discontinued academic work to participate in strike activity and what proportion discontinued because of passing grade could be obtained without further effort. Only in the unstructured comments on the questionnaire did a few faculty members speculate that many students took advantage of the situation to avoid work and receive an easy grade. For these reasons, *the data on grades and attendence are interpreted by the author in terms of indications of the commitment by students to academic endeavors* rather than participation or non-participation in strike activities.

A unique feature of Northeastern is its cooperative plan of education. The great majority of upperclass students devote alternate quarters to full-time regular employment in business, industry, government, and social service institutions. In the spring of 1970, therefore, approximately 4,000 of the upperclass students were participating in off-campus cooperative employment rather than on-campus studies.

Among these students on off-campus cooperative employment, the response to the strike was practically negligible. There were only two known instances of students leaving their cooperative employment to take part in the strike. But approximately 8% of the students in school during the strike period reported for work with their summer employer before the Spring Quarter was over, that is, when academic study was optional, some students chose to leave the campus and report for work ahead of schedule.

How did the faculty evaluate the Spring Term? A sizable minority thought that it was *a more valuable educational experience* than normal academic activities, and a larger minority felt that it improved relationships between faculty and students. *But a substantial majority agreed that academic standards were lowered during the Spring Quarter, and also that the disadvantages of the strike exceeded its advantages.*

There was strong feeling on the part of a substantial minority that their *rights of academic freedom were infringed upon*, particularly by student intimidation, by the temporary grading regulations, and by the general atmosphere of the strike.

In retrospect, what would the faculty now favor? Only a very few would close down completely; the others were approximately equally divided between the same arrangement (allowing students to withdraw temporarily without prejudice) and carrying on as usual. The faculty opinions are tabulated in Table 1.

Were there dangers in conducting this research about the strike while it was still going on? The faculty and administrators working on the project perceived many possible pitfalls and tried very hard to avoid them. The questionnaire went through several drafts to minimize possible criticism from both the activist and conservative factions and to avoid widening the breach between the two. Unstructured comments were solicited on the questionnaire, and three of these did attack the questionnaire itself as biased.

The report back to the faculty in September was merely a tabulation of questionnaire results, recorded grades, and other pertinent facts. To avoid charges of bias there was no narrative interpretation of the results such as those risked in this paper. Although the report was dull reading, it appraently was read, and favorable comments came back informally to the research group; criticisms were conspicuous by their absence.

Was this strike research worthwhile? When the research was initiated in May, 1970, it was anticipated that the same policy questions might be raised again at the beginning of the Fall Quarter. The research was intended to provide pertinent data which would have a bearing upon policy issues, to enable the faculty to anticipate the probable consequences of any decisions that might face them in the fall of 1970.

Because of the course of human events up to the time of this writing, the status of the research results has been one of academic interest rather than applied knowledge. How-

TABLE 1
A Tabulation of 240 Faculty Opinions in Response to Specific Questions

Faculty Opinions	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Number of Replies
The student strike provided a more valuable overall educational experience than normal academic activities	8%	15%	15%	32%	30%	234
A by-product of the strike was an improved relationship between the faculty and students.	14%	34%	18%	25%	9%	238
In general, academic standards for course grades were lowered during the Spring term, 1970.	39%	35%	10%	9%	7%	240
On the whole, the benefits of the student strike exceeded the disadvantages.	10%	11%	21%	31%	27%	232
Faculty rights of academic freedom (as defined by the A.A.U.P.) were limited during the period of the strikes.	12%	29%	15%	30%	14%	231

What was the source of limitation? (Check more than one if appropriate.)

77 The strike atmosphere
54 Student Intimidation
22 Faculty resolution on grievances
56 No limitation
74 Faculty resolution on grading
25 Faculty resolution on faculty responsibility
21 Other (not possible to summarize)

After reviewing the decisions made at the faculty meetings, in retrospect, would you now favor:

81 Essentially the same arrangement
9 Closing down completely
52 Allowing students temporarily to withdraw without prejudice
25 Other (not possible to summarize)
71 Carrying on as usual

ever, the greater the understanding of previous crises, the better is the preparation for the future.

Spin-off from the stated objectives of a project may provide unanticipated benefits. When the research data had been distributed to the faculty in September, 1970, the comments of one faculty leader were on the grade distribution of the "normal" Spring Quarter of 1969 in a particular college. This grade distribution had been included as a basis for comparison only, but it was looked upon as worthy of more concern and action than the data reported for the unusual period of the strike.

The temporary academic regulations of the spring of 1970 may also be viewed as *an unprecedented educational experiment.* The whole situation provides some clues as to the basic values and commitments within the academic community. While each observer may draw his own interpretations, the following are suggested:

> In a crisis period, approximately half of the faculty members would prefer business as usual for those students who desire it.
>
> Approximately half of the students have a strong commitment to academic endeavors.
>
> The commitment of many students to employment is greater than to academic endeavors.

These observations are consistent with the author's speculations about the future of the college campus and the youth community that is appearing in every large city in the country. This youth community is the section of town where young people are taking over a great many of the apartments, moving into the city when they finish high school, whether or not they go to college. The choice of a youth community (say that in Boston, Toronto, or San Francisco) will become more important than the choice of a university. For a youth community to be sustained, it will need not only a university, but also attractive sources of full-time and part-time employment for young people. And with the voting age going down to eighteen, the stage is being set for a new phase of town and gown relations.

STUDENT RESEARCH ORGANIZATIONS: A RESPONSE TO CAMPUS TENSIONS

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It has become obvious in recent years that many institutions have made varied attempts to avoid campus crises and to attenuate campus tensions. However, disruptions, dissatisfactions and disaffections have occurred so frequently that one might postulate that crisis is currently the general state of higher education. Policy formulation during this period of general crisis is often *ad hoc*—piecemeal instead of comprehensive—lacking the very credibility that is so important to meaningful decision-making. If future disruptions are to be avoided, or at least attenuated, the causes of student discontent must be quickly identified and mitigated; new means of facilitating responsible and meaningful participation in the decision-making process must be sought.

Much of the current discontent among students stems from lack of information and paucity of communications. It is believed that one remedy (not necessarily the only one) for this ill lies in the establishment of a student research organization on campuses. The activation of a formal student research organization, as a response to these problems of communication and information, is beneficial in that it: (1) establishes a vehicle of student confidence through research into pressing student concerns so that the nature and extent of a problem is scientifically and responsibly determined; (2) enables constructive proposals for action to be developed by students and administrators from a clear and precise definition of the problems involved; and (3) then enables administration, faculty, and students to share a more complete factual analysis for rational discussion of policy changes to meet the problems. Thus all segments of the university community that deal with campus problems increase their expertise and competence and student participation is made more viable and effective.

Before examining these arguments more carefully, it would be helpful to relate the operational concepts that ought to be incorporated into a student research organization. Since the cardinal law of research is objectivity, the organization must be structurally insulated from campus political forces. Ideally, the governing body of the organization consists of campus leaders from all segments of the university with the ratio of students to faculty and administration being approximately equal. A logical representation includes both student and faculty governing organizations as well as key administrators. This board sets broad policies and determines topics for research. The actual research is done by capable, research-oriented students under the direction of a student administrator selected by the board. Completed reports of research projects are carefully screened for objectivity by the board, and once the reports are published they can be made available to all who have need of the information.

A thoroughly researched report on a current campus issue can and should include elements such as: (1) a history of the situation; (2) the present status of the situation; (3) past and present policies dealing with the situation; (4) comparative situations and policies on other campuses; and (5) campus opinion regarding the situation. Such a report thus eliminates the necessity for having to decide so many things repeatedly, as though the issue had no history and had not been considered or decided before. More importantly, once students have improved channels of communication, a more sensitive and effective response in the evolution of educational policy should result.

Since a student research organization can be an objective source of factual information, it can also facilitate the decision making process by validating and certifying information. First of all, because it is by nature and membership a student organization it should have creditibility with the student population. Responsible, objective collection, collation, and dissemination of research information should also persuade administrators and faculty members to recognize the validity of the findings. Where the institution cooperates in release of information to the student research organization, the presentation of research findings can bridge any credibility gap, real or imagined, that might exist between the various elements of the campus community. The result is the establishment of an attitude favorable to more effective decision making.

A completed research report thus facilitates communication and, as a result, all who must deal with student-related issues share a more common factual background. Not only does this facilitate the agreement of facts, but is also has potential for improving and increasing student participation in overall governance. The outcome is that the student research organization provides meaningful student input into the communications processes, perhaps averting more overt actions such as demonstrations and riots.

With these operational concepts in mind the students, faculty, and administration of Appalachian State University (located in Boone, N.C.) cooperated during academic year 1969-70 to establish an organization known as the Student Research Union. Adhering strongly to the operational concepts stated earlier, the present organizational structure (which is about the third iteration) of Appalachian's Student Research Union is indicated in Figure 1.

The policies of the Union are set by a ten-member Board of Directors composed of the following individuals:

1. From the Administration
   (a) Dean of Student Affairs (Chairman of the Board);
   (b) One representative from the staff of the Vice-President for Academic Affairs;
   (c) One representative from the staff of the Vice-President for Business Affairs;
   (d) Director of Institutional Research;
2. From the Faculty
   One representative elected by the Faculty Senate;

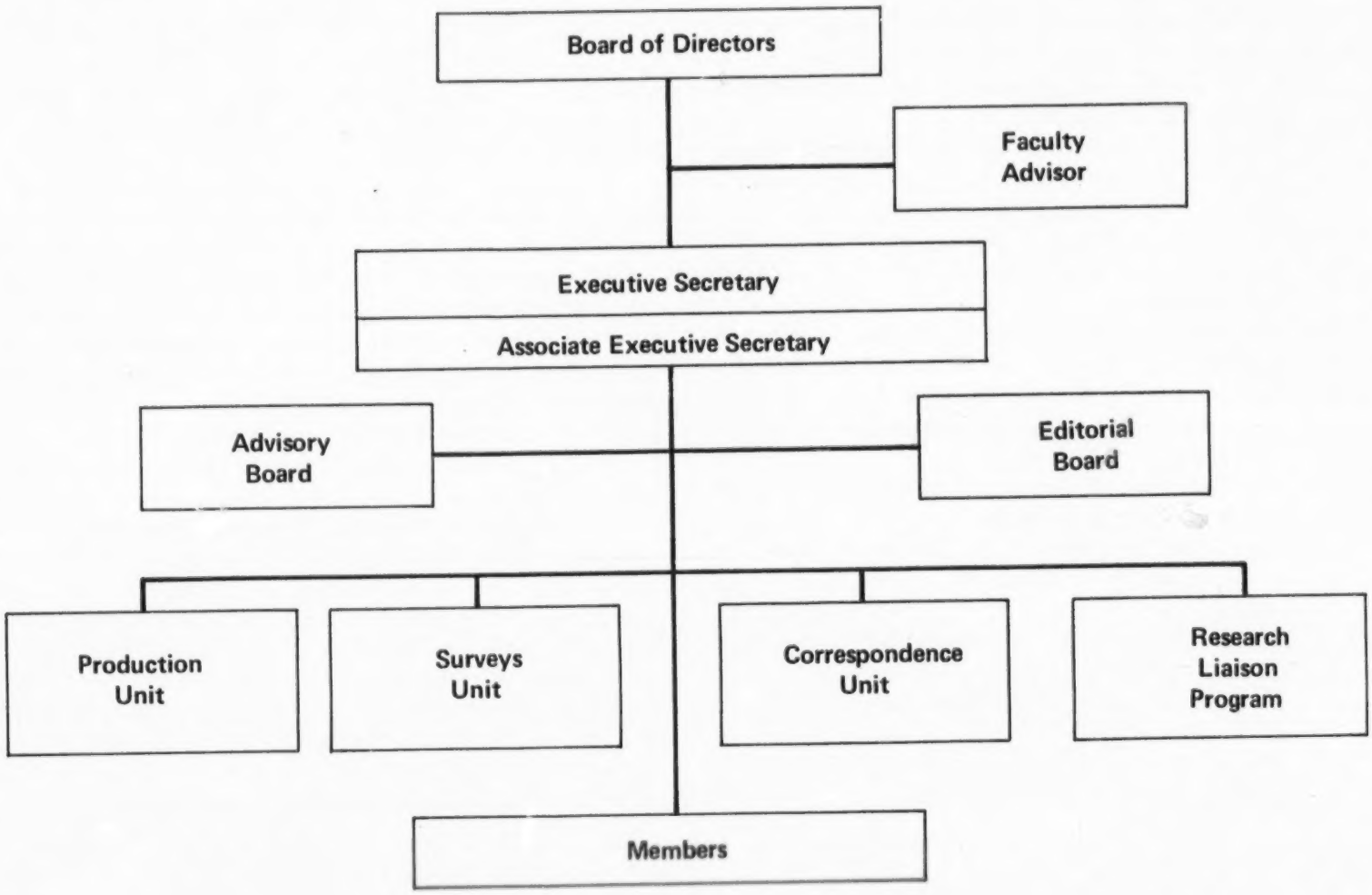

Figure 1. Organizational Structure of Appalachian's Student Research Union

3. From the Student Body
   (a) President of Student Government;
   (b) Vice-President of Student Government;
   (c) One Student elected by the Student Senate;
   (d) Two students from the University Committee on Institutional Research and Planning.

The actual research by the Union is done entirely by students under the direction of a faculty advisor (who is appointed by the Chairman of the Board) and a student who serves as executive secretary. The Advisory Board is concerned primarily with advising the executive secretary in regard to members' attitudes and, more importantly, continually seeks means to improve the operation of the Union. The Editorial Board screens reports for accuracy and objectivity and is responsible for correcting and revising reports. The Production Unit develops necessary forms, formats, etc., and is responsible for the printing of reports. The Surveys Unit develops and administers survey instruments and completes the survey process by compiling and analyzing data. The Correspondence Unit maintains communications as necessary with other institutions during the conduct of applicable research projects.

The newest and most viable element in the organizational structure is the Research Liaison Program. This unit was formulated to make the services of the Union more specific and more routinely available to various elements of the University community. In order to accomplish these goals, one experienced member of the Union is assigned to work directly with each of the following:

(1) Office of Business Affairs;
(2) Office of Student Affairs;
(3) Office of Academic Affairs;
(4) Student Government.

By acting somewhat as a "specialist" in his particular area, each research liaison is better able to (1) determine what information on student-related problems is needed at any given time, (2) gather this information and prepare a survey for use prior to the making of a decision, and (3) keep the Executive Secretary (and, in turn, the Board of Directors) advised as to the exact nature of projects underway in each area of University activity.

In other words, the Research Liaison Program is an attempt, primarily in the short run, to make more information available on a routine basis to individuals and groups who must reach decisions which directly affect students. Each area does, in a sense, have its own "branch" of the Student Research Union, supported by the total resources of the organization.

The manner in which a Research project is handled is outlined below.

1. Request for a specific project is made to the Executive Secretary.
2. The Executive Secretary prepares a project outline and submits it to the Board of Directors.
3. If the Board approves the project, it establishes a priority for the project.
4. When the work-load of the Research Union permits the initiation of the project, the Executive Secretary appoints a project director.
5. The project Director, the Associate Executive Secretary, and the Executive Secretary prepare a methodology.
6. The methodology is submitted to the Director of Institutional Research and the Board member who represents the area under research.
7. After the methodology is approved, members are assigned to the project.
8. The Directors of Survey and Correspondence will function where appropriate.
9. When the necessary work has been done the project director will compile a first draft of the report.
10. Those who worked on the project review the report, making adjustments as needed and complete the second draft. Members are then re-assigned to other projects.
11. The draft is reviewed and edited by the Editorial Board to produce the rough draft.
12. The rough draft is reviewed by the Board of Directors.
13. After approval by the Board, the report is printed and distributed.

All of the above is done under detailed guidelines established by the members and published in a *Manual of Operating Procedures.*

Membership in the Union is open to any interested student. Those interested are screened by the executive secretary for talent and ability, then certified for membership by the Board of Directors. Because of an annual influx of new members a continuous program of instruction in research methods is carried on (serious consideration is now being given to awarding academic credit for the instruction and work experiences in this area). Each year the members conduct a comprehensive self-study of the Union and report their findings and recommendations to the Board of Directors.

It might be interesting to note at this point that the operation of a Student Research Union is not *free*. The annual operating budget for supplies, postage, telephone, and a limited amount of travel runs about $2,500 and, ideally, should be somewhat more than that amount. Another major requirement is office and work space. We believe, however, that this is money well spent. Notwithstanding the intangible benefits, a listing of projects (Table 1) undertaken by the Union during the period of February, 1970 thru February, 1971 reveals a strikingly large output.

TABLE 1
Student Research Union Project Summary
February, 1970—February, 1971

Project	Requested By	Project Status	Project Status	Comments
Bookstore	Student Government	Completed	Released	
Traffic Enforcement	Student Government	Completed	Released	
CUES	Institutional Research	Completed	In-House	Awaiting approval and printing
Laundry	Student Government	Completed	Released	
Evaluation of Instruction	President	In Progress		Awaiting computation of raw data
Visitation	Student Government	In Progress		Awaiting student survey results Release—Feb. 24, 1971
Registration	Student Government	Completed	Released	Information Bureau
Black Students	President	Cancelled		No support from Black Students
Dormitory Telephones	Vice President Business Affairs	Completed	Released	Survey—Information Bureau
Winter Recreation	Club Committee	Completed	Released	Survey—Information Bureau
Parking Facilities	Vaughn Lowe	Completed		Information Bureau-Not be be released
Youth Activities		In Progress		Awaiting return of questionnaire

The question that arises, of course, is, "How *good* is the research?" We believe that it is not only acceptable but, even more important, that it is also *timely*—thereby improving decision-making in a general state of crisis as previously defined. Credibility has been maintained at a high level, and, to date, the Union has gained the respect of all elements of the University community.

Despite the level of success achieved by our research union, there are factors which tend to weaken its internal organization and, ultimately, its contribution to campus decision-making. The high standards of performance established for membership in the Union require highly motivated and competent members. Although the organization has been able to identify such individuals, it has had some difficulty in retaining them. One reason is that the inherent slowness of responsible research methods discourages students who wish to make a quicker and more visible impact in improving campus life. In addition, other student organizations actively recruit Research Union members. Finally, the lack of extensive reward, coupled with the volume of work required, tends to discourage continued membership. (The granting of academic credit for research activities, which was mentioned earlier, may tend to mitigate much of this problem.)

The Research Union's contribution to campus decision making is also limited in several ways. First of all, there is no way to guarantee that the information will actually be utilized. Although administrators seem to welcome the process, the student segment has yet to fully grasp the value of the information. The slowness of the research process, as mentioned previously, also tends to diminish the relevance of the studies that are accomplished. The newly added Research Liaison Program may serve as a partial answer to this problem.

Another potential problem which is inherent in any student organization is the turnover in personnel, particularly at the leadership level. This problem has been given consideration from the outset and has not yet been a handicap. It must, however, be kept constantly in mind; careful attention must be given to the continuous training of new leaders.

The members and the Board of Directors of Appalachian State University's Student Research Union believe that the establishment of student research organizations is a relatively new departure; and, if the movement can spread to other institutions, it may help to dampen some of the current fires of campus tension. They also believe that there is much potential for taking the next step: providing a means for student research organizations to cooperate with each other, thereby improving interinstitutional communications and reducing tensions over a wider area.

As a pilot experiment, Appalachian is now seeking funds to promulgate the concept of student research organizations at least throughout the state of North Carolina. The program would consist of three phases, covering an eighteen-month period. During the planning phase, about six months, the Student Research Union at Appalachian would assist participating schools in developing plans to establish their own organizations. During the operational phase, about 10 months, a consortium would be activated among the participating schools in order to experiment with different types of organizational structure and to develop different methods of interinstitutional communication. The project would culminate in an evaluation phase, about three months, wherein the effectiveness of the consortia concept would be assessed. The final report of the project would be prepared in such a manner that it could be adapted as a handbook for the establishment of student research organizations elsewhere.

In summary, it might be stated that information is a source of both power and leadership, and through student research of student problems, leading to more acceptable information, the exercise of student participation can not only become more effective but also more beneficial to the institution. More effective participation will help to give students a feeling of significance in campus governance. Student participation which is truly beneficial to the institution can help allay the fears of those who feel that students cannot participate responsibly and constructively. Thus the more effective and beneficial student participation brought about by a student research organization can help to draw the various elements of the campus community together. In these times of crisis, the credibility that can be added thereby to the campus decision-making process should effect appreciably diminished tensions. Diminished tensions will lead, hopefully, to a return to the scholarly process of negotiation—based on accurate information—in which students, faculty, and administrators can rightfully share both academic and moral responsibility.

WORKSHOP SESSIONS (headlining)

THE SCOPE OF RESPONSIBILITY OF AN OFFICE OF INSTITUTIONAL RESEARCH

Melvyn N. Freed
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The higher education enterprise has acquired the intricate complexities that are indicative of the large social organizations which dominate the societal scene. No longer do we enjoy the relatively simple academic life with the cushion of isolationism which permitted us, at one time, to contemplate the "truth" in a context of serenity. Today's colleges and universities suffer from the stress of unprecedented growth, conflicting impinging expectations, insufficiencies of financial resources, the demand for curricular changes that will conform with the new relevancy, and the press for admitting a numerically larger and more heterogeneous student population. Academe is being called upon to respond in innovative ways to the needs of the social and cultural revolution which is the experience of our time. Never before has there been such an urgent cry for higher education to evaluate itself and to discard the cloak of inefficiency and don the mantle of relevancy and efficaciousness.

In order for a university to remain viable, it is necessary that the institution be aware of its characteristics and its current *modus operandi*. This means that the university must constantly review itself through institutional self studies. No longer can we in higher education administer through the process of intuition, for too frequently have college administrators derived important decisions without first consulting research to ascertain answers to basic questions. Institutional research can provide the essential ingredients for wise and responsible managerial decisions.

An office of institutional research is an integral part of a university's organization. Its mission and personality must be a function of the unique characteristics, purpose, and complexion of the host institution. An office of institutional research may be viewed as the pacemaker for the institution's heart. It is the information center and serves as the stimulus for rational decision making.

To reiterate, the specific responsibilities of an office of institutional research must necessarily be determined by the special situation that prevails at each institution. Even so, there are certain guidelines which experience has demonstrated to be operationally advantageous in most circumstances. The author shall endeavor to enumerate some of these cardinal axioms.

Institutional research is *ipso facto* an administrative function. The institutional researcher is a member of the administrative team; however, his success is largely dependent upon soliciting and sustaining the cooperation of all sectors in the campus community. Faculty, students, alumni, and fellow administrators directly or indirectly comprise the institutional research team. Institutional self study is a process that permeates the entire institution if this endeavor is to be of maximum benefit to the higher education community.

Due to the comprehensive nature of the self-study process, it is important that the director be accountable to either the president or administrative vice president within a university or the dean in a college setting. The reason is quite simple. The office of institutional research must have direct access to all information which it deems necessary to fulfill its responsibilities. Concomitant with this freedom of operation is the prerequisite that the office of institutional research exercise discretion and diplomacy so that it can win the genuine endorsement and support of departments.

It is advisable that the role of an office of institutional research be clearly defined. All personnel in the community should be encouraged to call upon this office for assistance in building and developing their respective departments. The desirable goal is for this office to be considered as a vital member of the educational team whose services are woven into the *modus operandi* of the sundry departments and offices of the campus.

What are the proper responsibilities for an office of institutional research? It should be the repository of institutional data. This encompasses information germane to students, faculty, staff, finances, facilities, programs, and other relevant areas. The data should be organized in such a way that it can be readily retrieved and maintained in a current state.

An office of institutional research should identify its proper delimitations; that is, ascertain what it is and what it is not. It is the author's belief that the office of institutional research is not a bureau of educational research and it is not primarily intended for answering questionnaires. The office of institutional research has the responsibility for being a prime instrumentality for analyzing the effienciency of operations, the degree of attaining predetermined institutional goals, assisting in the formulation of long-range plans, and preparing the justification for institutional requests to the state legislature and other outside agencies.

The campus unit that is responsible for coordinating the institution's self study should address itself to the following areas of concern.

1. What are the strengths and weaknesses of the institution in terms of its stated objectives?
2. What kinds of students are being attracted to the campus and which ones are most likely to succeed in the social and academic environment that prevails on the campus?
3. What is the attrition rate and why?
4. What kind of faculty are attracted to and repelled by the campus environment?

5. What is the relationship between the institution's mission, academic input, student attrition, and faculty mobility?
6. Is the nature and diversity of the academic program compatible with the resources available to the institution? What programs are not professionally and economically justifiable?
7. What is the cost-benefit ratio of the various programs?
8. What is the economic impact of the university on the local community?
9. Are the academic physical facilities being utilized to their maximum capacity?

Research of the foregoing questions will yield the kinds of data that are indispensable to the efficient operation and conduct of a college or university. These are among the responsibilities which are to be encompassed within the jurisdiction of an office of institutional research. This office must exercise freedom of inquiry so that it may disclose responsible information that will contribute to the highest level of decision making in higher education and, ultimately, propel our institutions of higher learning in the pursuit of excellence.

COMMUNICATING INFORMATION FROM AN OFFICE OF UNIVERSITY RESEARCH

John Paul Eddy
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INTRODUCTION

One of the most important tasks of university office of institutional research (OIR) is to communicate its concerns throughout the campus or campuses where it has jurisdiction. This paper deals with some of the ways that an office of institutional research might use educational technology to broadcast information being produced in its systems.

REPORTING RESULTS FROM A UNIVERSITY OIR

In gathering material for this paper, the author requested from a number of university directors of institutional research their ways of communicating the results of their institutional research. The classic one page response that the author received was from a doctor "so-and-so" who reported that he did not have time to answer my inquiry because he was too busy installing a new computer system. When the author shared this story with an international authority on research, the well known doctor said that this was all too typical of some OIR directors who put the hardware project ahead of the person. This raises the key question: When a university has a MIS with a computer facility, how does the OIR communicate the results of its research? After participating in a research study on MIS, the biggest complaint from university users was the lack of personal attention given them in any MIS approach from a university OIR.

During the summer of 1970, the author was a member of an interdisciplinary team of 22 scholars from throughout the nation that worked on setting up a model international MIS. While the 304 page report[1] is too lengthly to be adequately summarized here, it could be used by any college or any university OIR to set up various levels of MIS with close reference to the book *Sources of Federal Support for Higher Education: Experimental Systems for a National Information Network.*[2]

With regard to reporting OIR research results, some of the following materials and modes have been found helpful. They constitute nothing essentially new and a practical combination of multi-media presentations and public relations approaches. However, few institutions of higher education deploy all of them or many of them regularly. Therefore, the problem is more a lack of communication efforts by an OIR, not the abundance of ways to do them. The list does not include all possibilities.

1. *Television sets* (closed circuit) between OIR and various departments and offices of the university such as student affairs (arrangement operates in Chicago Board of Education between its various offices).
2. *Selective mimeos* from OIR to various departments and offices that may be interested in particular research (arrangement operates at Loyola University of Chicago Grant Office to various offices).
3. *Monthly newsletter* from OIR to various departments and offices (arrangement operates at Loyola University of Chicago from their Computer Center to various offices).
4. *Press conference* by OIR on particular research study (example used by Psychology Department of Loyola University of Chicago on national investigation published on April 18, 1971, "Religious Section" of *Time*).
5. *Weekly news sheet* by OIR on certain research study to be given in a public lecture (illustration used by Development and Foundation Office at New Mexico Tech).
6. *Research show* by OIR on outstanding research (done at the Marshall Space Flight Center in Huntsville, Alabama, UNISTAR for the National Aeronautics and Space Administration).
7. *Small group sharing* by OIR of evaluation information (done for a North Central Association of Schools and Colleges Visiting Team at Holy Trinity High School in Chicago).
8. *Field Work* in institutional research by OIR causes participants to share research work with some college staffs (arrangements operate at Loyola University of Chicago School of Education Graduate Program in Student Personnel Work in Higher Education and Office of Institutional Research of Wheaton College).
9. *Influential person* by a Presidential Report with OIR on university state of affairs (annual arrangement at Loyola University done on three of its six campuses—not the Rome, Italy Campus—annually by the president of the university).
10. *Banquet Approach* by OIR with well-known speaker (annual arrangement by Illinois College Personnel Association).

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[1] "*UNISTAR* User Network for Information Storage, Transfer, Acquisition, and Retrieval," Final Report CR-6133, prepared under NASA-Auburn—ASEE Summer Faculty Fellowship Program in Engineering Systems Design, School of Engineering, Auburn University, Auburn, Alabama, October, 1970.

[2] Rowan A. Wakefield, Walter F. Dunne and Frederick Kirch, *Sources of Federal Support for Higher Education: Experimental Systems for a National Information Network*, (Albany, New York: Research Foundation of State University of New York, 1968).

HOW THE USOE AND STATE COORDINATING AGENCIES RELATE TO THE ORGANIZATION AND ADMINISTRATION OF AN OFFICE OF INSTITUTIONAL RESEARCH

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As higher education institutions have become larger and more complex and have begun to feel pressure to be more accountable to public and political groups, it has become necessary for an increasingly massive amount of data to be produced, utilized in decision making, and laid open for the scrutiny of interested persons. This situation has given impetus to the development of offices of institutional research and made the function of such offices a much more important element of institutional structure. At the same time, state and federal agencies have been called upon to provide data across institutions, states, regions, and nationally. These broadly based data have been requested by many sources. Institutions often request such data for internal planning, the public is interested in determining what higher education is doing and how well it is being done, and political leaders utilize broadly based comparable data for evaluation purposes and to assist them in making future decisions concerning higher educational programs and funding levels.

Although many other aspects are involved in the efforts of most state coordinating agencies, much of their work is similar to that done by an office of institutional research but on a broader scale. The office of institutional research is usually interested in collecting and analyzing data from throughout the institution to be used by top level administrators in the decision making process. Most readers will be readily aware that securing sound data or data that are comparable from different institutions is no easy task. The state coordinating agencies must maintain data on numerous aspects of higher education from each institution within their respective states and have comparable information from other institutions and states available which can be provided to legislators and others as they study higher educational problems and make future plans.

At the federal level, the Higher Education General Information Survey (HEGIS) is attempting to satisfy the demands for national higher education data in several different reporting areas. The more broadly the scope of data collection is expanded, the more difficult it becomes to secure truly comparable information in which confidence can be placed. This comes about due to a difference in definitions which are used. In some cases, different definitions are used because it is very difficult for an institution to modify a system currently in use, and other inconsistencies creep into use through time and differences in understandings. The point is that state, regional, and national agencies must maintain sizeable data files and their problems in doing so with comparable and sound data are certainly significant.

In establishing a new office of institutional research or further developing a currently modest one, the institutional researcher can easily find himself somewhat overwhelmed by the data that need to be collected and analyzed and the management structure that is necessary to promote easy retrieval and usability. The simplest procedure would obviously be to concentrate on the internal needs of the institution, establish definitions which are the most easily elicited from the existing internal structure, and set up analysis procedures to provide analyzed data in a form that would be most immediately usable internally. Such a system can be a most important asset to an institution in the absence of any other formal arrangement but eliminates many major aspects that should be taken into consideration. Certainly a vast amount of time and effort is spent in completing questionnaires and responding to requests for information from potential students, graduate students and other investigators conducting studies, the press, and various other sources. Further complications arise when formal data collection agencies request the same information but ask for it in different forms. Such a situation creates confusion on the part of the respondent and it undoubtedly seems that these agencies could cooperate in developing a single set of definitions and forms for their data collection. Although appearing logical on the surface, it is still true that various agencies will need to use different definitions and formats due to the unique purposes for which the data will be utilized. As an example, one agency may request faculty salary data in terms of the total remuneration paid to a person designated as a faculty member for all services he performs. Another agency may request faculty salary data in terms of the salary allocated only for instruction and that part paid for services conducted in other areas such as research, public service, counseling, etc. would be allocated to the appropriate area. In both cases the need is legitimate and there would be no sound way of combining the requests to satisfy the needs of both agencies. Considering such unique needs, data demands will continue to be great and, even in the best situation, there will probably continue to be a duplication of requests in different forms for certain data.

The alternatives open to the institutional researcher are to completely ignore data demands from outside the institution, respond to only those demands which request data in the format in which it is kept by the institution, or try to devise a system that will allow data to be available in almost any format conceived. In reality, the final alternative is the only one most of us have the luxury of accepting. In public institutions, supported by tax dollars, there is an obligation to provide requested data since most of it will be a part of the public domain. In many cases, state law demands that the institutions provide data to state coordinating agencies or other agencies in the form specified by the requesting agency. Private institutions enjoy somewhat more flexibility

in these matters but they, too, are subject to some obligations to provide data. In some cases state law required that private institutions provide data to be used in statewide higher education planning and the practice of providing state support to private institutions is becoming more prevalent thereby placing them in a position of additional obligation.

At the federal level, there is little direct legal provision for demanding that data be provided upon request. In certain cases, however, the privilege of participating in selected federal support programs depends to a great degree upon the institution's willingness to provide data. Obviously, a funding proposal would require support data and the failure to provide such data would undoubtedly be a contributing factor in the failure of the institution to be granted such support.

Since these ultimate realities exist, the successful institutional research director will try to recognize the data demands that will be placed upon him and attempt to organize and administer the office in such a way that data will be available when necessary. Prior to actually beginning work on a data management system, the wise institutional researcher would do well to be in contact with HEGIS, the state coordinating agency, regional educational agencies, and potential data request sources such as the National Education Association, the American Association of University Professors, or others that might request data from that particular institution. Setting up a data base is no easy task and it will often be the case that some of these agencies can be very helpful beyond making known the data requirements that might be forthcoming. Modifying a data base once it is established is often as difficult, if not more so, than establishing one initially. This is not meant as an indictment but simply recognizes that data base modifications usually involve several offices or functions in an institution. Each such office or function will need a certain element of time to make its own changes and coordinate with other offices or functions so that continuity of procedures and services can be maintained. For all their autonomy, the various elements of a higher education institution continue to be highly dependent upon one another.

The data base developer who ignores all or any potential source of demands upon the system will likely find at a later date that he is unable to provide selected data that may be highly important to the institution. As such instances develop, he may well find himself engaged in a long and tedious search, possibly by hand, through a mountain of cards, papers, etc. By being in contact with every conceivable source of data demand, a majority of these situations can be anticipated in advance and potential problems minimized. This kind of development will promote an institutional research operation which will meet the demands of most requests without placing undue strain upon the human and financial resources of the institutional research office and other offices. The result will be the maximum in economy and efficiency and promotion of the type of situation that can only be of benefit to the institution, the office of institutional research, and all concerned.

THE PLACE OF INSTITUTIONAL RESEARCH IN THE ORGANIZATIONAL STRUCTURE: PUBLICATIONS AND REPORTS

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The place of institutional research in the organizational structure seems to be related to (1) function, (2) role, and (3) image. Publications and reports evolve as the natural flow from the investment made in data collection and analysis and are addressed to specific users. An attempt will be made to discuss briefly each of these topics.

THE FUNCTION OF INSTITUTIONAL RESEARCH

Function as herein defined means the type of operational tasks or responsibilities either assumed by or delegated to the institutional research office. This includes the day-to-day tasks and those that are of intermediate or of long range import.

The primary function of institutional research seems to be that of collecting, analyzing, interpreting and reporting information on the characteristics of the university to the central administration for use in decision making. Such information may merely describe current operations, or it may be used in an evaluative manner to seek to determine how well the university is achieving its objectives. In this context, institutional research can be viewed, using the words of Fowler,[1] as the "developer" of information upon which decisions are to be made. The basic function of institutional research, in other words, is to help the decisions being made to be better decisions, using solid information or true intelligence rather than the mere collection of "facts."[2]

To carry out this function a mangement informational system is a necessity. The MIS, as advocated, should be concerned with the information flows associated with decision making. This means the institutional research officer should know the institution's basic objectives—these objectives being stated in operational terms. Also, he should have some awareness of the decisions needed to attain these objectives. Consequently, he should possess or attain an understanding of the decision-making process of the institution. Thirdly, he should know what information is needed to help make these decisions, and, lastly, what data, as a consequence, should be generated or collected.

In generating the data, the institutional research officer needs to know who the recipients of the information will be and when, in what form and with what accuracy they will need it. This helps to determine the reporting procedures.

THE CONCEPT OF ROLE IN INSTITUTIONAL RESEARCH

Role, as defined in this paper, means how the institutional research officer interprets his job constraints. For example, does he perceive that he has broad or delimited research rights? Is his mode of operation active in the sense that he is involved in policy formulation by anticipating informational needs? Or is it passive in that he merely provides the statistical information needed on request or in conducting only administration-directed research? And should he be a "developer" of data or a policy maker in that he also becomes a "user" of the data?

John E. Nangle identified the plight of the institutional research officer in role determination when he said, ". . .Is the institutional research officer an in-house consultant, a scientist whose primary concern is doing 'research,' a provider and storehouse of information, or a member of the management team who helps make decisions and shapes policy?"[3]

The type of role defined for the institutional research officer in the institution is determined not only by the individual himself, but also by his publics—those on and off campus, e.g., the central administration, the faculty, and the state and federal collecting agencies. The administrative philosophy of the institution, the personal characteristics, the needs and competencies of the institutional research officer, the personality of the president of the institution, and the requirements of federal and state reporting, all interacting together, largely determine the role of institutional research on campus. Ideally, the role definition should be mutually determined rather than self-determined or externally imposed.

Some statements on role were voiced at last year's Forum.[4] In essence, the opposing points of view revolved around the question of whether institutional research should be a staff or service office or have line responsibility within the organizational structure. The present position and prior background of the advocates seemingly made a difference as to the position taken.

IMAGE AND ITS RELATION TO INSTITUTIONAL RESEARCH

The image institutional research conveys can be important to us in assessing our effectiveness. Image, as defined herein, means how the institutional research office is perceived by significant others, e.g., administrators, faculty, and personnel in state and federal agencies. Image assumes many forms. We have the *real* image or that which actually is, the *biased* image or that which we think it to be, and the *ideal* image or that which is desired.

Some questions that might be posed regarding the image the institutional research office reflects to significant others are: (1) Is the office perceived to be dependable in producing the requested reports and data when needed? (2) Is the institutional research office perceived as producing reliable, relevant, credible and objective information? (3) Is the office perceived as an agent of control or change? (4) Do

faculty perceive the institutional research office as a tool of the administration or as a service organization catering to the needs of administration, students and faculty alike? (5) Is the information generated perceived as being used only for validation of decisions made or for use in planning and decision making?

In summary, the place of institutional research in the organizational structure is determined by how effective significant others think the operation is, by the scope of function assumed by or delegated to the institutional research office, and by how comfortable the institutional research officer is with his defined or performing role.

The challenge to institutional research officers, once their information is generated, is to make it readable and useful to the decision-makers. This concerns the publishing of relevant and meaningful data and the release of compiled reports. Typically, the audience will be key campus administrators. However, wider dissemination may result when the data have community implications and are appropriate for release to the news media.

A major publication of many institutional research offices is the so-called "fact-book," or, as we call it, the *Statistical Summaries.* Divided into five sections, the *Summaries* contains information on (1) enrollment and student characteristics, (2) SCH production and FTE students by level of instruction and academic major, (3) the GPA of students by class level, sex, and course load, (4) faculty and (5) graduation statistics. We have also reported a six-year history for observation of growth trends. Finally, the *Summaries* contains a narrative which seeks to summarize for the reader the pertinent findings.

The results of studies requested by the administration or initiated by the institutional research officer are summarized and submitted to university administrators, deans and department chairmen. These reports we term "Research Summaries" and file in looseleaf binders for ready reference.

One of the functions assumed by our office is to provide staff support to faculty committees of the University Senate. Studies conducted for these committees are written up and become part of the committee's formal report submitted to that legislative body. Examples are the reports on faculty benefits, women's education, tenure, and sabbatical leave.

Periodically, we are requested to do special studies for the library or bookstore administration, for example, to help them assess student opinion as to effectiveness in meeting student needs. Upon completion of these studies a report is filed which contains a summary of findings, conclusions and implications for their use.

A fertile field of information about the University has been found in the master's and doctoral theses that have been conducted on various aspects of the University or its students. Through the use of coded categories these references are compiled into a bibliography which is circulated to the administration.

In conclusion, it was mentioned earlier that the function of institutional research was to generate data that could be used in decision making, or, better yet, to help the decisions being made be better decisions. Publications and reports become vehicles whereby this may be accomplished; for in them lie the hard facts, the findings and conclusions upon which realistic and sound decisions can be made which, hopefully, will make for a better institution meeting and serving the needs of its constituents.

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[1] F. Parker Fowler, Jr., "The High Cost of Non-Involvement Between the Researcher and the Policy Maker," in *Institutional Research and Communication in Higher Education*, ed. by Patricia S. Wright (The Association for Institutional Research, 1970), p. 143.

[2] *Ibid.*

[3] John E. Nangle, "Comments on Institutional Research: What Role in Administrative Decision Making?," in *Institutional Research and Communication in Higher Education*, ed. by Patricia S. Wright (The Association for Institutional Research, 1970), p. 50.

[4] John E. Stecklein, James R. Montgomery, F. Parker Fowler, Jr. and Banks C. Talley, Jr., "Communication of Policy," in *Institutional Research and Communication in Higher Education*, ed. by Patricia S. Wright (The Association for Institutional Research, 1970), pp. 137-144.

COMMUNICATION AND INITIATION OF RESEARCH IN THE INSTITUTION

Joseph V. West
Baylor University

Most of my remarks are based on our operational procedures at Baylor University, a liberal arts university of 6,000 students. Our Office of Institutional Research was established as a separate entity five years ago. This year, it was placed under the Director of University Planning and Research with the following collateral teams of investigators:

1. Committee Information Systems
   Analyst-Programmer
   Administrative Data Processing Manager
   Academic Data Manager;
2. Committee on Experimental Education;
3. Graduate Research Committee.

These teams or committees assist in initiating, advising, relating, and facilitating all areas of research. The only other advisory unit active at the moment is the Faculty Evaluations Committee.

At our university any faculty member or administrator may initiate an institutional research project through our office or with the Director of University Planning. However, the majority of our projects are initiated by the President, Executive Vice-President, the Director of Planning and Research, and myself. If the rationale of a proposal appears to have merit for the university, objectives are defined, a research design is constructed, and procedures are put in operation to gather data. Some projects are initiated by the aforementioned committees, faculty members, department chairmen, deans, and a few are initiated by federal, state or church related agencies. The nature of the project is naturally relevant to the scope of the initiator. Examples are as follows.

The President—Primarily requests come from outside sources; for instance, the space utilization request from the Texas Coordinating Board and HEW, the American Council on Education Survey of Freshmen, federal grants in the nature of Upward Bound and Talent Search.

The Administrative Vice-President-Reasons for freshmen leaving Baylor at mid-year and reasons for freshmen not enrolling after being accepted for admission, cost of graduate programs, an administrator evaluation by faculty.

Dean of Instruction-Supportive evidence for enlarging advanced placement and for promoting College Level Examination Program.

Dean of Admissions-Success of students related to predicted success.

Department Chairmen-Performance on Graduate Record Examination or Undergraduate Examination related to GPA in major field, and predicted success.

Director of Planning and Research-Assist in the preparation of planning documents for the next five years of operation of each academic department and the comparisons of these projections with past experience.

Faculty Members-Supportive evidence for advanced placement as it is operating in a certain department; the quality of students attracted to a certain department.

Alumni Association-Collection of data on the types of occupation of graduates of selected classes as well as an evaluation of satisfaction with educational preparations.

Chaplain-Collection of data on students' ratings of chapel speakers for the entire school year. (Freshmen and sophomores are required to attend chapel fifty times during school year).

Student Congress-Initiation of faculty ratings by graduating seniors which was carried on for five years. A rating of residence hall counselors was also carried out at students' request.

There is no distinct line between initiators of various projects and ad hoc requests. Many times what appears to be an ad hoc develops into a longitudinal project. One-time ad hoc requests have included: (1) How do bright freshmen succeed in their second English course when the first courst has been skipped? (2) How did the course grade expected by a student affect his evaluation of the teacher in that course? (3) What is the actual grade point average in relation to the predicted grade point average for a student from a particular junior college? Ad hoc requests which have developed into longitudinal studies include:

1. The predicted course success of freshman in specific courses; i.e., General Biology, American History, Composition and Rhetoric;
2. The job success of employed campus personnel in relation to the results of their personnel tests;
3. Departmental comparisons of the GRE Advanced Test or UP Field Test results.

None of our advisory committees function past the stage of initiating and systemizing the projects. Communication, for the most part, is our responsibility. Dissemination of the results of institutional research can be a frustrating task. Many of our faculty members are unfamiliar with statistical jargon; therefore, it is imperative to report the research analysis in a meaningful form. Copies of the data should be conveyed not only to the initiators, but to others qualified to receive them. Some administrative projects such as studies of the cost of instruction by departments are available only to the upper level of the administration. Others, as exemplified by the results of the American Council on Education Freshman Survey should be reported to the entire faculty.

Adequate communication with the faculty and staff is more involved than just reporting the results. Our major concern at present involves the Course-Instructor Evaluation. Because of the personal and threatening nature of the evaluation, the faculty needs to understand the complete

course of action: (1) the need and use of the evaluation; (2) the procedure used in gathering the data; (3) the security of the data; and (4) who receives the information.

Each professor is provided with the results of how the students rate him or her on a five point scale. The course is also rated on the same scale. Percentiles are given on each item in order for the professor to understand how he and the course compare with others. The most sensitive part is the transference of the written comments by the students. The evaluations were well accepted up to this point, then there was a breakdown. Students reported to each other what they had written, the student newspaper misquoted and magnified statements made by the President of the University. There was almost a revolt by the faculty and resolutions were made at the faculty meetings to abolish the evaluation. It would be too much of a generalization to say "never count on the student newspaper for communicating with the faculty" but do proceed with caution. To restore confidence between the faculty and the administration, an open-door policy was maintained in the President's office, the Administrative Vice-President's and our office. All of us had innumerable conferences with professors to satisfy questions and/or complaints. We learned to keep all involved parties informed, met with department chairmen to be sure they understood the procedures used, wrote explanatory letters prior to gathering data, sent interpretive letters with computer print-outs, and tabulated results as soon as possible. Baylor is small enough for coffee time to be a public relations opportunity.

My final word is to encourage and promote constant instructional re-evaluation, be accessible to anyone who wishes to initiate a project, provide a feasible approach to the problem, couch the data in a relevant and intelligible language and distribute the information to the ones who will benefit by having it.

INSTITUTIONAL AUTONOMY AS SEEN FROM A STATE-LEVEL COORDINATING COMMISSION

Jerry H. Rust, Jr.
Tennessee Higher Education Commission

My topic concerns institutional autonomy and a state level coordinating commission for higher education. Most of the quotations from my talk are taken from three current sources which I recommend to you. These are: *The Capitol and the Campus, State Responsibility for Post-secondary Education*, A Report and Recommendations by the Carnegie Commission on Higher Education, April 1971; *The Troubled Campus, Current Issues in Higher Education*, 1970, G. Kerry Smith, editor; and *Report on Higher Education*, Frank Newman, Chairman, March 1971.

I want to discuss with you the following issues:

1. What is institutional autonomy?
2. Why is institutional autonomy vital to our system of public and private higher education?
3. Why should we have limitations on institutional autonomy?
4. Why the need for accountability from public higher education?
5. What institutional control is advisable as opposed to what state control is advisable as seen by a statewide coordinating agency?

WHAT IS INSTITUTIONAL AUTONOMY?

Some authors view autonomy in such a relative manner that it almost defies analysis. Other authors give such a narrow definition to the term that its use is restricted. Does autonomy mean the legal right and privilege to be whatever the institution wants to be to any group of users of its services at any given time?

In a recently released study of current issues of higher education, *The Troubled Campus*, Dr. Lyman A. Glenny states:

> The substance around which discussions of autonomy revolve should be educational policy. Who makes policy? Toward what objectives? For which segments of college clientele? By what educational means? These questions are at the heart of the matter. Should each institution have absolute autonomy in answering these questions without regard for answers which other autonomous institutions provide? Does the state (the society) have a stake which might rightfully exceed the collective desires and interests of the autonomous institutions?[1]

What is the function of the university community in a free society? Our concept of the university as an "Ivory Tower" has given way to the idea of the university as an open market place for ideas, and recent activities suggest that the university is primarily an instrument to achieve social change. John J. Corson states that:

> The college or university has in common with other groups of human beings four common characteristics:
>
> 1. It exists to accomplish something; it has a purpose or purposes.
> 2. It must have resources. These may, in oversimplified terms, be described as men, money, and materials.
> 3. It must have processes that facilitate men and women working together to accomplish a purpose.
> 4. The enterprise moves on—it grows or it retrogresses. Change is a common characteristic of large enterprises.

Corson further states:

The college or university differs from other forms of enterprise in three significant respects:

1. Colleges and, to a still greater degree, universities exist to serve a multiplicity of purposes.
2. The college, and to a lesser degree the university, is more dispersed as an enterprise than the typical business enterprise or governmental agency.
3. The responsibility for making decisions is more widely diffused.[2]

The role of the individual campus has changed in recent years and significantly since World War II. The recently released Newman Report gives two reasons for these post-war changes.

> First, the rapid growth in enrollments at public colleges has outstripped enrollment in the private sector. Second, public campuses, which previously viewed themselves as autonomous and distinct organizations much like the private colleges, today are grouped into multi-campus systems where pressures for centralized decision-making and bureaucracy are growing. These pressures have accelerated the trend to homogeneity, diminished the sense of campus identity and solidarity, eroded the role of the president, encouraged the rise of system-wide interest groups, and set the stage for the politicizing of the university.
>
> To reverse this cycle, we believe it is necessary to create conditions that encourage maximum initiative at the individual campus, in directions leading toward publicly-established objectives.[3]

WHY IS AUTONOMY VITAL TO OUR SYSTEM OF PUBLIC AND PRIVATE HIGHER EDUCATION?

The recent Carnegie Commission report, *The Capitol and the Campus*, cites several reasons for maintaining institutional autonomy.

A viable society requires institutions of higher education with sufficient independence so that their numbers feel free to comment upon, criticize, and advise on a great variety of policies and practices.

Creative research and effective teaching require freedom. Great strides in higher education have been made by those institutions that were relatively free from external governmental control.

Freedom from external control facilitates intelligent planning.

External control often inhibits the type of experimentation and innovation required for continued improvement of our educational resources.

Efficient operation requires that degree of institutional independence needed for intelligent management.

Also, in a country, such as France, with a single national system of higher education, every important university and college issue becomes a potential political issue. Our pluralistic system has helped to prevent this, to the advantage of both the colleges and universities, and the body politic.[4]

WHY SHOULD WE HAVE LIMITATIONS ON INSTITUTIONAL AUTONOMY?

Self-examination has been forced on our institution of higher education by alienated students, dissatisfied faculty and legislators, disenchanted alumni, and disappointed parents who are challenging the university and asking many questions about the role of the university within their society and perhaps the reason for the university's existence. These are difficult questions; even so, they are being asked; and the answers given are being subjected to unprecendented scruntiny and debate. In my opinion the publicly established statewide objectives of higher education can be made only with the help of independent, constructive, yet critical, analysis from a statewide agency, regardless of the institutional governance structure. This agency should have an opportunity to view the state in its entirety and take into consideration the many publics of the institution, specifically the faculty, administration, students, community, and the state.

WHY THE NEED FOR ACCOUNTABILITY FROM PUBLIC HIGHER EDUCATION?

Freedom is defined in many ways and may be considered only a state of mind. Regardless of the social or political order, most people agree that freedom exists only when order prevails. The establishment of order may take place in many ways, but usually is concerned with a set of procedures or rules to which all must be accountable, even the university. In a speech in Denver, Colorado, about a year ago, Dr. John D. Millett (Chancellor of Ohio Board of Regents) stated:

> If the university in our society is to obtain increased resources for its operations and for its capital plans, then society must be convinced that the university serves useful social purposes. Contributors to the maintenance of an institution may rightfully expect some degree of accountability from that institution.[5]

responsible to its many constituents: students, faculty, administrators, legislators, and the general public. In most states public institutions are responsible for adherence to general and specific state laws, such as fiscal controls which will lead to the proper supervision of receiving and spending state, local, federal, and student funds. The institution is responsible also for determining and meeting the local, state, regional, and national manpower requirements. Also the public should expect from its public higher education institutions leadership in providing educational opportunities for its many constituents.

WHAT INSTITUTIONAL CONTROL IS ADVISABLE AS OPPOSED TO WHAT STATE CONTROL IS ADVISABLE AS SEEN BY A STATEWIDE COORDINATING AGENCY?

There must be effective ways of coordinating and/or governing higher education within the state; however, this control may encroach upon institutional autonomy. Currently a popular means of control is found through establishing statewide coordinating agencies.

The Carnegie Commission found in their recent study on *The Capitol and the Campus* that:

> In almost all cases, however, the states recognized the need for a greater degree of autonomy for public colleges and universities than that afforded to other agencies of the state.
>
> Twenty-three states give some form of constitutional recognition to higher education whereas few state departments other than constitutional offices, are so recognized.
>
> Forty states confer corporate powers on their highest educational boards (few other departments have them).
>
> Elections or appointments of board members are for a longer period than for most public offices, and it is often specified that selection of board members be on a nonpolitical basis.
>
> Many boards have been given direct borrowing power rarely given to state divisions.
>
> Many are given power to appoint treasurers and select their own depositories and disburse funds, especially institutional funds, directly—a condition very rare in other state agencies.
>
> Many higher education boards are given wide discretion and in many instances complete autonomy on policy matters, such as admission requirements, graduation requirements, programs, courses, and degrees to be offered.
>
> Almost all states leave to the higher education boards full authority over all matters relating to academic and professional personnel.

> Most states require more or less complete personnel reporting in connection with the budget but leave final determination to the boards after the appropriation is made. Few boards are given complete authority over administrative and clerical personnel other than the highest administrative position.[6]

The Carnegie Commission further states that there are matters over which it seems appropriate for the state to exercise influence and even control; and these are:

1. Numbers of places available in state institutions as a total and in specific programs where there are clear manpower needs (e.g., medicine)
2. Number and location of new campuses
3. Minimum and maximum size of institutions by type
4. General admissions policy (i.e., whether open door or selective)
5. General level of institutional budgets, including construction budgets
6. General level of salaries
7. Accounting practices
8. General functions of institutions
9. Major new endeavors
10. Effective use of resources
11. Continued effective operation of the institutions within the general law.[7]

In summary I have reviewed the following points.

1. Institutional autonomy in public higher education may be difficult to define but restrictions which interfere with the institution's everyday operations are not desirable. I believe that most statewide coordinating agencies are not interested in getting involved in these daily tasks but are interested in the policies which generally define the role and scope of the institutions. Also a function of the coordinating agency is the general area of requesting state appropriated funds, academic programs, planning and coordination, and special attention given to long-range planning on a statewide basis.
2. Institutional autonomy is necessary in that it encourages experimentation and innovation and helps to bring about an atmosphere for creative research and more effective teaching.
3. Limitation on institutional autonomy has been brought about by alienated students, dissatisfied faculty, legislators, alumni, parents, and the executive branch of state government. Generally, I would not agree that most state government finance and administration offices are currently equipped to gather or interpret data from public higher education institutions nor do I believe that they are interested in assuming these tasks except by default; however, if the institution does not meet its responsibilities or if statewide institutional systems or governing boards or coordinating agencies do not meet their responsibilities, then the executive branch of the state government has no alternative but to participate in the higher education decision-making process.
4. For most of the reasons previously mentioned, institutional accountability is demanded. Public higher education is responsible to state laws and its constituency and should be held accountable for providing quality higher education. Institutions may become competitive without general guidance, and carried to an extreme this competition may not be for the good of the institution, the state, faculty, and students.
5. There are effective ways of having control without hampering institutional autonomy; however, this means that the institution cannot be all things to all people at any given time.

The statewide coordinating agency for public higher education must walk delicately on hot coals surrounded by several publics who are calling for the agency to run in different directions. These are:

1. The institutions, each of which desires all of the other institutions coordinated but not its own.
2. The executive branch of state government which insists that the statewide agency maintain administrative data and assist in bringing about a more efficient management operation while maintaining a small data base and operating on the least possible budget.
3. The legislature which wants and intends to have a part of the action in decision-making and looks to the coordinating agency to provide data, lower costs, eliminate programs, rid the campus of undesirables, both professors and students and even administrators, and in general keep everybody happy.

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[1] Lyman A. Glenny, "Institutional Autonomy for Whom," in *The Troubled Campus, Current Issues in Higher Education*, ed. by G. Kerry Smith, 1970, p. 155.

[2] John J. Corson, *Governance of Colleges and Universities*, 1960, pp. 9—10.

[3] Frank Newman, *Report on Higher Education*, 1971, p. 91.

[4] *The Capitol and the Campus*, A Report & Recommendations by the Carnegie Commission on Higher Education, 1971, pp. 104—105.

[5] John D. Millett, *Accountability in Higher Education*, 1970, p. 2.

[6] *The Capitol and the Campus*, pp. 101—102.

[7] *Ibid.*, p. 105.

SPECIAL INTEREST GROUPS

SENSITIVITY TESTS ON A UNIVERSITY COST STUDY METHODOLOGY

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The University of Calgary

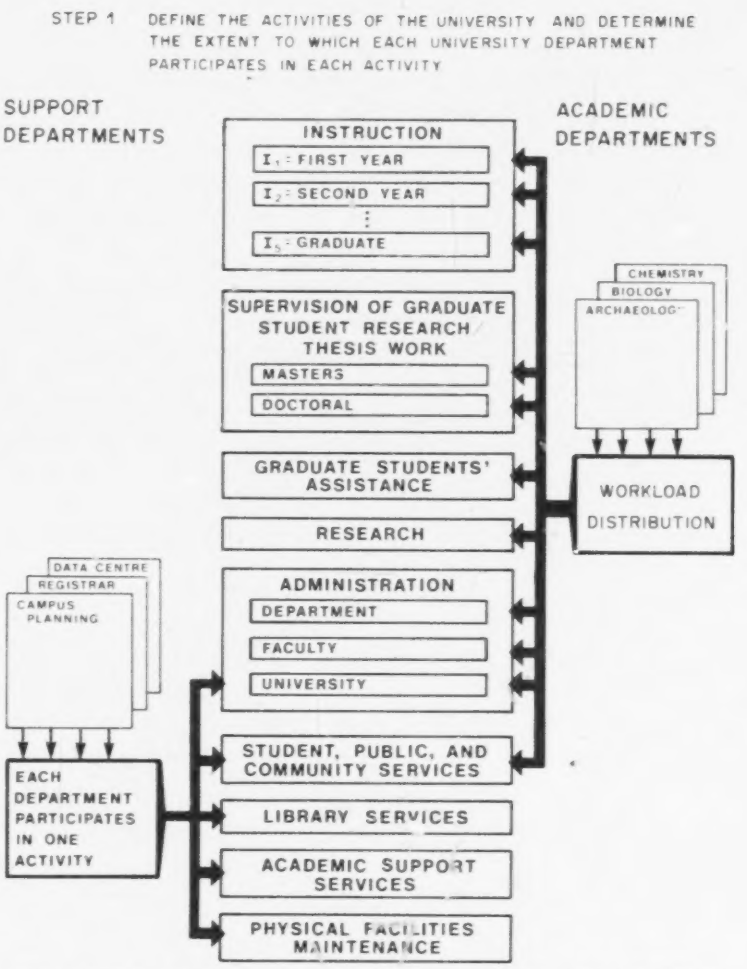
The purpose of this paper is to present results of several sensitivity tests on a given university cost study methodology. This methodology was used recently to assess the validity of the enrolment weighting formula by which the Alberta Universities Commission apportions operating funds among universities in Alberta. Results of the Calgary study were relative per student costs of student academic programs at The University of Calgary during 1969/70. These relative costs or operating expenditures were compared with enrolment unit weights assigned academic programs by the Commission.

THE METHODOLOGY

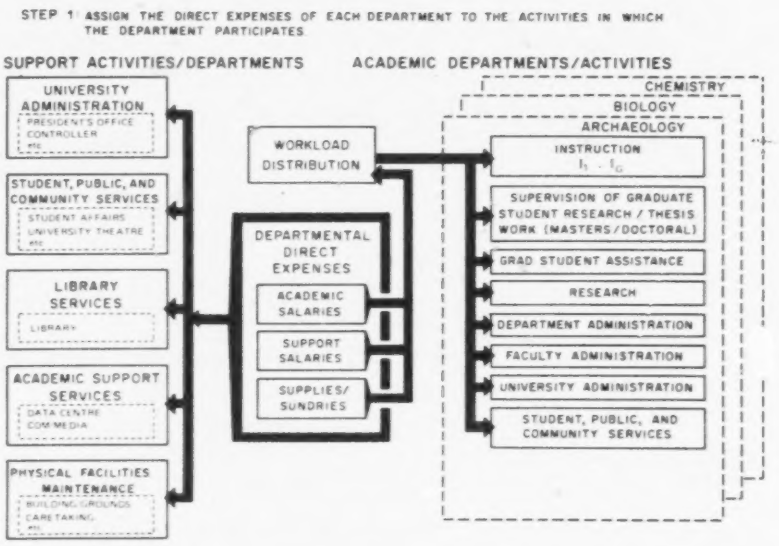
The methodology, similar to that used by the Association of Universities and Colleges of Canada (W. B. Coutts *et al.*, *An Exploratory Cost Analysis of Some Canadian Universities*. Ottawa: AUCC, 1970), was adapted for a joint Alberta universities cost study by D. Gordon Tyndall, University of Alberta. The method is described in a series of fourteen steps, some of which are shown diagrammatically on the following pages. It divides logically into three phases. The first phase, University Activity Analysis, is based on the assumption that output of the university results from a finite set of activities. The purpose of Phase I is to define this set of activities and to determine the extent each department participates in these activities. The second phase, Activity Cost Synthesis, allocates departmental expenditures to University activities defined in Phase I. The final phase, Cost Per Student Synthesis, proportionally assigns accumulated activity costs to student academic programs on the basis of student benefit from activities.

Participation of academic departments in activities is determined by a questionnaire completed by department heads. Results of the questionnaire indicate how people in various staff categories distribute their time among activities. Support departments such as library, data center, central administration offices and so on are assumed to engage in only one activity. Based on these participation factors direct departmental expenditures are assigned to activities as shown in Phase II, Step 1. The remaining steps in Phase II reallocate costs of all activities to those activities which can be directly related to student academic programs.

At the end of Phase II, all university expenditures included in the study have been allotted to six activities. Two of these are university-wide activities, University Administration and Student, Public and Community Services; one is a faculty-wide activity, Faculty Administration carried out by professors in each faculty; and the remaining three activities are performed in academic departments, as shown in Phase II, Step 9. This figure indicates that although allocations have



PHASE I: UNIVERSITY ACTIVITY ANALYSIS



PHASE II: ACTIVITY COST SYNTHESIS

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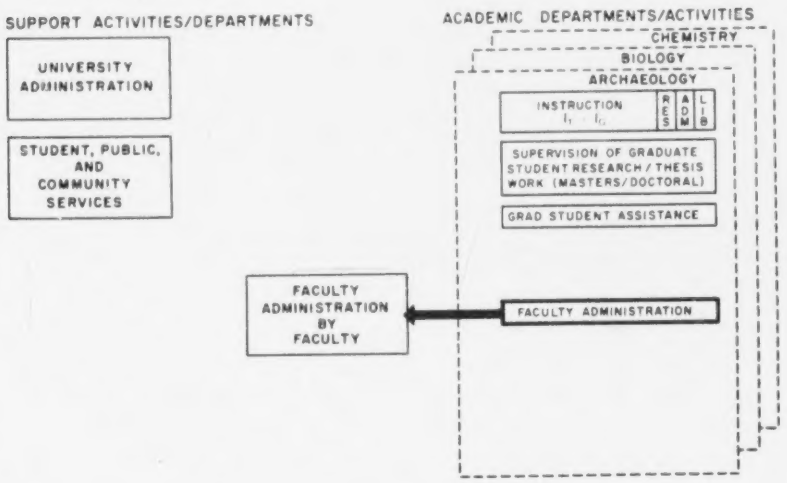
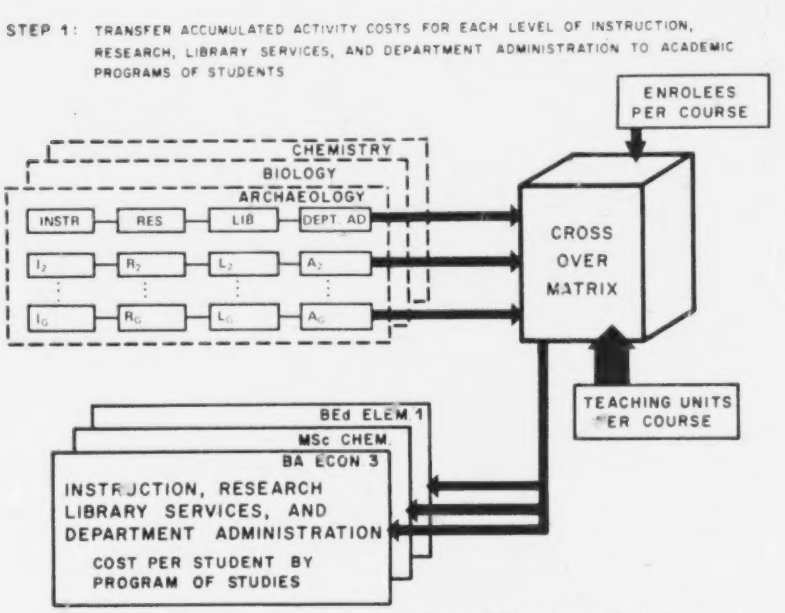


PHASE II: ACTIVITY COST SYNTHESIS



PHASE III: COST PER STUDENT SYNTHESIS

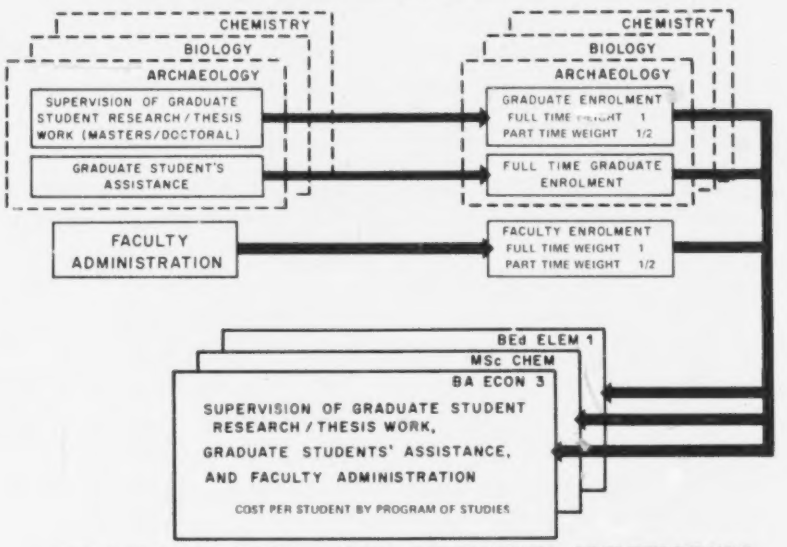
been made conceptually, computationally, the computer program was designed to ensure that allocations can be identified for subsequent manipulation of these data required in sensitivity tests. For example, the figure of Phase II, Step 9, shows that the cost of "Instruction" in each academic department is the sum of twenty numbers (five levels each of Instruction, Research, Department Administration and Library Services).

Phase III assigns accumulated costs of activities to student academic programs on the basis of participation of students in these activities. This is accomplished as follows: the number of teaching units generated by each level of instruction in each department is determined by the Equation below. Costs of Instruction at each level are distributed to each course offered by a department at that level in proportion to the number of teaching units generated by the course. The cost per enrolee in a course is the total course cost divided by the number of registered students.

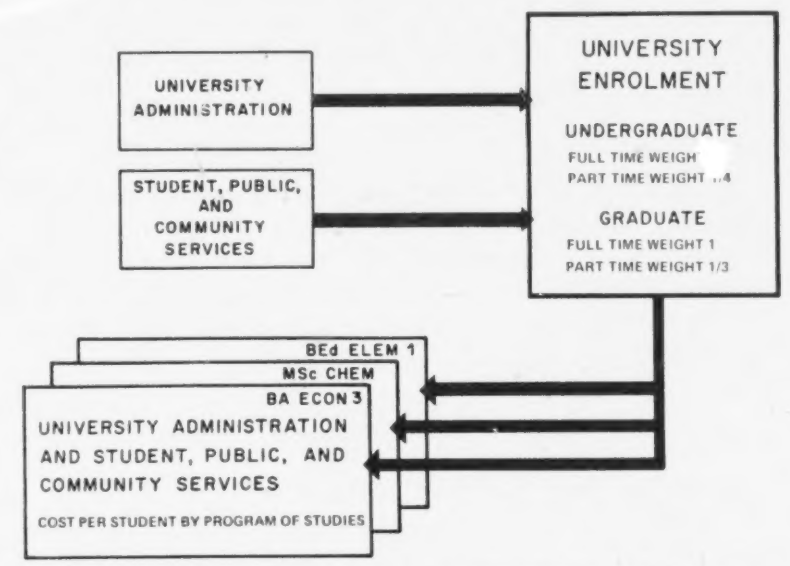
$$TU_{ijk} = \left\{ \frac{LH_{ijk} \cdot LS_{ijk}}{3} + \frac{BH_{ijk} \cdot BS_{ijk}}{6} \right\} W$$

where *TU = teaching units*
LH = lecture hours
LS = lecture sections
BH = laboratory hours
BS = laboratory sections
W = term weight (1 and 1/2)
i = teaching department
j = instruction level
k = course

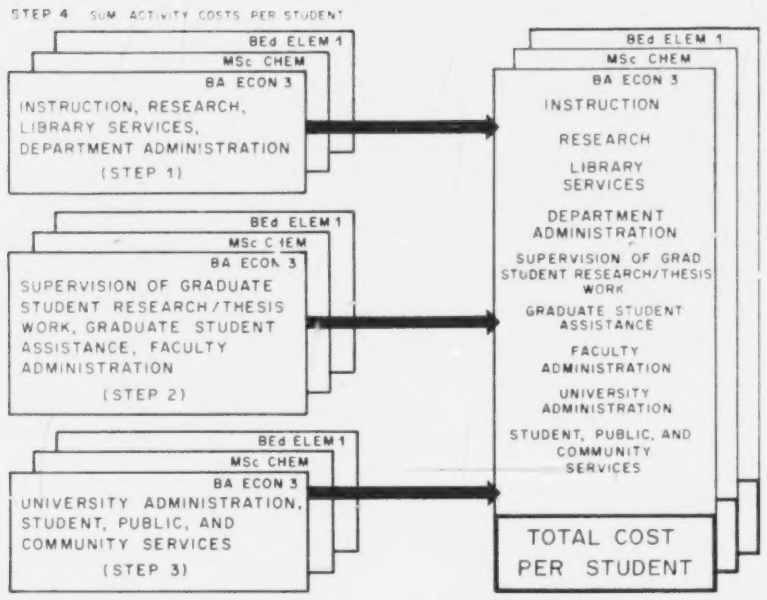
The academic program of students registered in each course is then assigned a cost based on per enrolee cost by a crossover matrix as shown in Phase III, Step 1. The cost of remaining activities are similarly assigned in proportion to student participation as shown in figures of Phase III, Steps 2 and 3. Determination of total cost per student of each academic program is achieved by summing all per student cost components as shown in Phase III, Step 4.


STEP 2: TRANSFER ACCUMULATED ACTIVITY COSTS OF SUPERVISION OF GRADUATE STUDENT RESEARCH AND THESIS WORK, GRADUATE STUDENTS' ASSISTANCE, AND FACULTY ADMINISTRATION TO ACADEMIC PROGRAMS OF STUDENTS
CHEMISTRY
BIOLOGY
ARCHAEOLOGY
SUPERVISION OF GRADUATE STUDENT RESEARCH / THESIS WORK (MASTERS/DOCTORAL)
GRADUATE STUDENT'S ASSISTANCE
FACULTY ADMINISTRATION
GRADUATE ENROLMENT
FULL TIME WEIGHT 1
PART TIME WEIGHT 1/2
FULL TIME GRADUATE ENROLMENT
FACULTY ENROLMENT
FULL TIME WEIGHT 1
PART TIME WEIGHT 1/2
BEd ELEM 1
MSc CHEM
BA ECON 3
SUPERVISION OF GRADUATE STUDENT RESEARCH / THESIS WORK, GRADUATE STUDENTS' ASSISTANCE, AND FACULTY ADMINISTRATION
COST PER STUDENT BY PROGRAM OF STUDIES

PHASE III: COST PER STUDENT SYNTHESIS


STEP 3. TRANSFER ACCUMULATED ACTIVITY COSTS OF UNIVERSITY ADMINISTRATION, AND STUDENT, PUBLIC, AND COMMUNITY SERVICES TO ACADEMIC PROGRAMS OF STUDENTS
UNIVERSITY ADMINISTRATION
STUDENT, PUBLIC, AND COMMUNITY SERVICES
UNIVERSITY ENROLMENT
UNDERGRADUATE
FULL TIME WEIGH
PART TIME WEIGHT 1/4
GRADUATE
FULL TIME WEIGHT 1
PART TIME WEIGHT 1/3
BEd ELEM 1
MSc CHEM
BA ECON 3
UNIVERSITY ADMINISTRATION AND STUDENT, PUBLIC, AND COMMUNITY SERVICES
COST PER STUDENT BY PROGRAM OF STUDIES

PHASE III: COST PER STUDENT SYNTHESIS



PHASE III: COST PER STUDENT SYNTHESIS

SENSITIVITY TESTS

Many logical alternatives exist for the detailed procedures used in most steps of the methodology. Since there is no absolute standard against which to measure validity of final answers of the cost study, several sensitivity tests were undertaken to determine dependency of final results on certain steps in the procedures of the study. Results of these tests shown in Table 1 are given relative to the corresponding costs calculated by the methodology.

In general, two kinds of sensitivity tests can be performed on a given methodology. The methodology can be changed structurally—sequence of steps can be changed, execution of some steps can be altered or eliminated entirely. Parametric changes can also be made—different variables can be used in place of square feet, enrolees, teaching units, accumulated costs and so on, to determine proportions of allocations. An important test omitted here is that which shows the dependency of output on the validity of input as obtained by the questionnaire. A validity check of questionnaire input is described in *An Exploratory Cost Analysis of Some Canadian Universities*, and was based on a sampled comparison of detailed daily diaries with overall annual time estimates. The following describes each sensitivity test performed in this study.

Sensitivity Test 1

Activity costs of Research, Library Services and Department Administration are assigned by the methodology to Instruction and Supervision of Graduate Student Research and Thesis Work. This sensitivity test determines the effect of eliminating these allocations to Supervision of Graduate Student Research and Thesis Work. Total costs of Research, Library Services and Department Administration are allotted only to Instruction on the same basis as in the methodology.

Sensitivity Test 2

The methodology assigns activity costs of Research, Library Services and Department Administration to each of the five instruction levels of departments. Accumulated costs in each level are then distributed to courses taught at that level on the basis of teaching units. This sensitivity test eliminates only the level distinction. The total department instruction component of Research, Library Services and Department Administration is proportionately assigned to courses in each department without regard to level.

Sensitivity Test 3

Activity costs of Instruction, Research, Library Services and Department Administration are transferred by the methodology to courses via teaching units as shown in Phase III, Step 1. Sensitivity Test 3 changes the methodology parametrically by transferring these costs to courses via weekly student hours (number of weekly formal instruction hours per full year course multiplied by number of enrolees) rather than teaching units. No distinction is made between lecture and laboratory weekly student hours.

Sensitivity Test 4

This test is structurally identical to Test 1. Parametrically, however, weekly student hours are used to cost courses rather than teaching units.

Sensitivity Test 5

Structurally this test is identical to Test 2. Parametrically, weekly student hours rather than teaching units are used.

Sensitivity Tests 6 and 7

Library Services are allocated by the methodology to departments in proportion to departmental enrolees taught where all departmental enrolees are treated equally. Test 6 weights enrolees in Humanities, Social Sciences and Natural Sciences, 3:2:1 respectively before assigning costs to departments. In Test 7 the weights are 10:5:1 respectively.

DISCUSSION OF RESULTS

The relative sensitivity test results given in Table 1 were obtained by dividing costs per student for each student academic program by the corresponding per-student cost as calculated by the methodology. These ratios show the relative effect of various changes in the methodology on cost study results. Since the cost study was used to determine the relative per student costs of programs, rather than precise dollar costs, figures given have been rounded to one decimal place. Increased precision might suggest sensitivity not consistent with overall accuracy of the methodology. The number of full time students in each program is given as an aid in interpretation of the results. Results of programs with small student numbers may not be as indicative as those of larger programs. Relative sensitivity test results are for full-time students only although the study costed all students. Monies included in the study ($21,000,000) represent the University's net operating expenditures for 1969/70. Monies expended from sponsored and assisted research funds and Faculty of Medicine expenditures are excluded. No capital expenditures are included.

Results of Test 1 show the tendency of the structural

TABLE 1
Relative Sensitivity Test Results

ENROLMENT UNIT WEIGHT	STUDENT ACADEMIC PROGRAMS NAME (NO. OF STUDENTS)	LEVEL	SENSITIVITY TESTS 1	2	3	4	5	6	7
1	Pass Arts (556)	1	1.1	1.0	1.0	1.1	1.2	1.0	1.0
1	Pass Arts (643)	2	1.1	1.0	1.0	1.1	1.1	1.0	1.0
1	Pass Arts (569)	3	1.1	1.0	1.0	1.1	1.0	1.0	1.0
1	Honors Arts (52)	1	1.1	1.1	1.0	1.1	1.2	1.0	1.1
1.5	Honors Arts (37)	2	1.0	1.0	1.0	1.0	1.0	1.1	1.1
1.5	Honors Arts (29)	3	1.1	0.9	0.8	0.9	0.6	1.0	1.1
1.5	Honors Arts (44)	4	1.1	1.0	0.8	0.9	0.6	1.1	1.1
1	Pass Science (418)	1	1.1	1.0	1.0	1.1	1.2	1.0	1.0
1	Pass Science (409)	2	1.1	1.1	1.1	1.2	1.2	1.0	1.0
1	Pass Science (304)	3	1.1	1.2	1.0	1.1	1.0	1.0	1.0
1	Honors Science (114)	1	1.1	1.0	1.0	1.0	1.2	1.0	1.0
2	Honors Science (48)	2	1.1	1.1	0.9	1.0	1.0	1.0	1.0
2	Honors Science (34)	3	1.1	1.3	0.9	1.0	0.8	1.0	0.9
2	Honors Science (70)	4	1.1	1.1	1.0	1.1	0.7	0.9	0.9
1.5	Fine Arts (79)	1	1.0	1.0	1.0	1.0	1.1	1.1	1.1
1.5	Fine Arts (52)	2	1.0	1.0	0.9	1.0	1.0	1.1	1.1
1.5	Fine Arts (23)	3	1.0	1.0	0.9	0.9	0.8	1.1	1.1
1.5	Fine Arts (11)	4	1.0	0.9	1.0	1.0	0.7	1.1	1.2
2	Music (27)	1	1.0	0.9	1.0	1.0	1.0	1.1	1.1
2	Music (14)	2	1.0	0.9	0.7	0.7	0.7	1.1	1.1
2	Music (7)	3	1.0	0.9	0.6	0.6	0.6	1.1	1.1
2	Music (10)	4	1.0	1.5	0.6	0.6	0.6	1.1	1.1
1.5	Business (176)	1	1.0	1.1	1.0	1.0	1.2	1.0	1.0
1.5	Business (172)	2	1.0	1.0	1.1	1.1	1.2	1.0	1.0
1.5	Business (121)	3	1.0	1.0	1.0	1.0	1.1	1.0	1.0
1.5	Business (70)	4	1.0	1.0	1.1	1.1	1.0	1.0	1.0
1.5	Physical Education (113)	1	1.0	1.0	1.0	1.0	1.1	1.0	1.0
1.5	Physical Education (121)	2	1.0	1.0	1.0	1.0	1.0	1.1	1.0
1.5	Physical Education (109)	3	1.1	1.0	1.0	1.0	1.0	1.0	1.0
1.5	Education (504)	1	1.1	1.1	1.0	1.1	1.2	1.0	1.1
1.5	Education (578)	2	1.1	1.0	1.1	1.1	1.1	1.0	1.1
2	Education (623)	3	1.1	1.0	1.0	1.1	1.1	1.0	1.0
2	Education (296)	4	1.1	0.9	1.0	1.1	1.0	1.0	1.0
2	Education Diploma (19)	1	1.1	1.0	1.2	1.4	0.9	1.0	1.0
1.5	Engineering (275)	1	1.1	1.0	1.0	1.1	1.3	1.0	1.0
1.5	Engineering (143)	2	1.1	1.2	1.0	1.1	1.3	1.0	1.0
3	Engineering (111)	3	1.1	0.9	1.0	1.1	1.0	1.0	1.0
3	Engineering (86)	4	1.1	0.8	1.1	1.2	0.8	1.0	1.0
2	Social Welfare (49)	Master's	1.0	1.0	1.0	1.0	1.0	1.0	1.0
3	Arts (125)	Master's	0.9	1.0	1.0	0.8	0.8	1.0	1.1
3	Arts (7)	PhD (lower)	0.8	1.0	1.0	0.8	0.9	1.0	1.1
6	Arts (22)	PhD (upper)	0.8	1.0	1.0	0.8	0.9	1.1	1.1
4	Science (188)	Master's	0.8	1.0	1.0	0.8	0.8	1.0	0.9
4	Science (12)	PhD (lower)	0.9	0.8	1.1	1.0	0.8	0.9	0.9
6	Science (121)	PhD (upper)	0.8	1.0	1.0	0.7	0.8	1.0	0.9
3	Education (124)	Master's	0.9	1.0	1.0	0.9	0.9	1.0	1.0
3	Education (3)	PhD (lower)	0.8	1.0	1.0	0.8	0.9	1.0	1.0
6	Education (16)	PhD (upper)	0.9	1.0	0.9	0.7	0.8	1.0	1.0
4	Engineering (56)	Master's	0.8	1.0	1.0	0.8	0.8	1.0	1.0
4	Engineering (6)	PhD (lower)	0.8	1.0	1.0	0.9	0.9	1.0	1.0
6	Engineering (50)	PhD (upper)	0.8	1.0	1.0	0.8	0.9	1.0	1.0

change in the methodology to amplify costs of undergraduate programs relative to graduate programs. Swings in per student costs, in some cases up to 20%, indicate the significance of details of execution of the affected steps on the output of the study.

Test 2 results do not differ substantially nor systematically from those of the methodology, thus denoting stability of the methodology with respect to this structural change. This is significant because funds affected by the change are nearly one-third of the study total. Although not conclusive, this result gives some insight into the influence of the level information gained from the questionnaire on final results. This test averages the instruction level information used for most dollar allocations made by the crossover matrix (Phase II, Step 1) without significant influence on calculated costs per student. For purposes of the cost study the methodology is therefore relatively insensitive to level distinctions of the sort eliminated by Test 2.

The effect of the parametric change examined by Test 3 was slight and indicates stability of the methodology with respect to use of these parameters. Weekly student hours were chosen because they are indicative of the student instruction load whereas teaching units are proxies for professor course load. Teaching units are the better choice for measuring actual costs but weekly student hours, since they have an enrolee component, are perhaps useful for manifesting future potential magnitudes of the instruction job.

The results of Test 4 show a decided shift in relative costs of undergraduate programs as compared with graduate programs. Since this test is structurally identical to Test 1 and results of the two tests differ only slightly, they indicate stability of the method of Test 1 to this particular parametric change. A detailed examination of the results of Tests 1, 3 and 4 show linearity of the methodology with respect to both these structural and parametric changes.

Test 5 combines this parametric change and the structural change which partially eliminates the levels of instruction, yielding results which differ substantially from the methodology. Undergraduate programs measure relatively more costly with the methodology, while graduate programs appear less costly. Within program categories the lower level program relative costs are higher than those of upper level programs. This is attributed to the enrolment pattern of The University of Calgary, in which lower level courses have more enrolees and thus under the parametric change are assigned proportionately more costs. The instability of the procedures of Test 2 under the parametric change further emphasizes the stability of the methodology itself to this change as shown by the results of Test 3.

Test 6 and 7 were performed during the cost study because it was felt that the method of allocating library expenditures to the departments was theoretically not the best choice. It was necessary because departmental library service data were unavailable. The insensitivity of results to these changes indicates that the choice made was not critical to final results.

The sensitivity tests reported in this paper were undertaken to answer certain questions which arose during the course of the Calgary 1969/70 study. Much more research would be required to establish fully the sensitivity of the methodology. Further work is being undertaken to examine other aspects of the methodology particularly with respect to the sensitivity of the cost per student outputs to the faculty workload distribution inputs.

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COMMENTS ON THE RESULTS OF AUCC, CAUBO AND CAUT COST STUDY

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The operation ultimately known as "an Exploratory Cost Study of Some Canadian Universities" was initiated by the Association of Universities and Colleges of Canada with a promise of financial support from the Federal Department of the Secretary of State at a time when the Federal Government was still active in educational affairs. In order to obtain the support of the principal related university "estates," the control of the project was placed in the hands of a steering committee with equal representation from the Canadian Association of University Business Officers as well as from the Association of Universities and Colleges of Canada itself.

The study was intended to be a completely comprehensive effort covering all costs of all universities in Canada. It was recognized, however, that no central body could make such a study in a reasonable time or for a reasonable cost and it was, therefore, planned from the beginning as a do-it-yourself operation. Each university, in other words, was to study its own costs and report on its results to the central consolidating agency, the Joint Steering Committee. As a result, the activities of the Steering Committee and its research staff were restricted to the general design of the project, the giving of advice to participants during the progress of the study, and the consolidation and interpretation of results.

The work of the Committee, and thus of its staff, was, accordingly, carried out in three stages; first, the development and distribution to the institutions of a manual of operation entitled *Guidelines for a Cost Study in Canadian Universities and Colleges*—the *Guidelines* for short; second, a quite lengthy period of consultation and discussion with the individual institutions regarding the meaning of the *Guidelines* and their application to the problems peculiar to each institution, and, finally, the interpretation of the results reported by the institutions. Each stage presented separate problems and each problem had to be resolved in the context of the individual institution and of the collective effect on the study as a whole. The whole operation was extremely complex as the rather substantial bulk of the official report makes obvious.

It can no doubt be argued with some justice that the report is too detailed and too voluminous and it is probably true that some condensation would have been desirable. I have not found it possible, however, to condense even the bare outlines of the design and operation of the system down to the point where it would have been suitable for circulation as a preliminary paper for this meeting. I will, however, give a brief summary of the basic structure of the system of analysis used in order to provide some background for the discussion of the results, conclusions, and observations which will follow. Anyone wishing more detail or wishing to learn the reasoning behind the proposals will have to refer to the report itself.

In brief outlines, the study provides an analysis of the operating costs of the participating universities (ultimately 23 in number) for the academic year 1966-67. Four main "activities" were identified; instruction, student research and thesis work, research, and auxiliary enterprises. The costs attributed to these activities, except auxiliary enterprises, were further distributed to "faculties" (essentially the conventional ones but with "arts" and "science" as two separate entities). The costs attributed to each faculty were, in turn, allocated to the various "years" or "levels" within the faculty. Each of these final subdivisions—each year of level of each defined faculty—was referred to as a "program" and costs were determined for each "program" separately for each of the three activities—instruction, student research and thesis work, and research. Total costs for each program were also calculated.

To permit evaluation and comparison of the results, three classes of "unit costs" were calculated for each program—costs per student, costs per course registrant, and costs per teaching unit. "Cost per student" is the simplest and most obvious of these. It represents, as the name indicates, the total cost attributed to each program divided by the number of students enrolled in that program. Once again, the three "activities" were kept separate to produce a cost of instruction per student in each program, the research cost attributed to each student and, at the graduate levels, the cost of providing supervision of student research and thesis work. "Cost per course registrant" is actually an element of the cost per student since it represents the cost of offering instruction, etc. to the student taking courses or doing research at each year or level of each faculty.

Both of these unit costs, calculated by reference to student numbers, are highly sensitive to class sizes and the third unit cost, "cost per teaching unit" was developed in order to neutralize to some extent the effect of variations in class size. A "teaching unit" in this sense was intended to be a single course or course section so that this unit cost should actually represent the cost of placing a professor in front of a class for a year. Although we had some difficulty in practice with this concept, we feel that this cost, reflecting what is actually the basic unit of university activity, is worthy of further investigation and development.

The method of analysis adopted in the study was essentially that of conventional commercial cost accounting, that is, the analysis, allocation and re-aggregation of the costs recorded in the accounting system in accordance with their nature and the purposes for which they were incurred. The organizational unit chosen as the "cost centre" was the department since this is the basic university operating unit and is also, in most cases, the basic budgeting and accounting unit as well. The analytical procedure, as a result, involved the distribution of the general "overhead" expenses of the university administration to the subordinate units, the faculties, and, ultimately to the departments.

Separate procedures for the analysis and distribution of overhead expenses were provided for each of the major classes of central administrative expenditures—plant maintenance, general administration, student administration, and library—with the procedures suggested being those considered appropriate to the nature of the item being analyzed. Additional procedures were also suggested for the further distribution to departments of those costs allocated to the faculties in the first analysis as well as for those costs incurred directly by the faculties themselves. All costs were in this way ultimately distributed to departments where they were added to the direct departmental costs to produce a total cost attributable to each department.

The costs attributed to the departments in this way were then distributed to the various "programs" for which the department was responsible in ways which seemed appropriate for the item involved. The major element of departmental cost is, of course, faculty salaries and the greatest care and consideration went into the distribution of this element. The actual procedure used was the "faculty questionnaire," a rather complicated form which each faculty member was asked to complete during the year showing the percentage of his "remunerated" time that he devoted to the various activities for which he was responsible. The categories provided for included, in addition to the defined programs—instruction, student research and thesis work, and research—a rather complex list of supplementary activities—general reading and study, non-academic student services, departmental, faculty and university administration, inter-university and outside academic organizations, public and community services, and "other."

Since it was expected that there would be strong faculty resistance to the perusal of this information by academic administrators and others, it was suggested that arrangements should be made, if possible, to collect the returns anonymously or in a confidential manner.

The completed questionnaires were then used to distribute the faculty salaries to the various departmental activities in proportion to the time reported. Other direct departmental expenses, together with the department's share of the administrative overheads were similarly distributed to produce a total for each "program" or other function. The actual distribution had to take place in several stages so that the departmental costs attributed in the first instance to faculty or university administration could be transferred up to the appropriate superior unit for inclusion in the amounts to be allocated to departments.

The procedure described to this point produced, after all transfers and allocations had been made, a cost figure for each of the defined programs for each department. These costs, when aggregated by faculties produced the basic cost for the programs in each faculty. These totals were then used to produce the cost per course registrant for each year or level in each faculty and the cost per teaching unit in the faculty. One further manipulation was then required in order to take into account the "cross-overs" between faculties and years. This involved the determination of the proportion of students at each year and level which came from other years or levels or from other faculties and the transfer of the appropriate portion of the related costs to the other year, level or faculty.

This produced for each defined program a total cost relating to the students actually enrolled in that program from which a cost per student could be calculated. Separate calculations were made for instruction and for research with the research allocation among years and levels being based on a rather arbitrary formula.

The results calculated in this way were reported to the Committee's staff by each institution. It had originally been hoped that further statistical analysis by computer would be performed on the data so collected. It became obvious, however, as the results began to come in, that the inconsistencies and errors in the results were such that no significant results would be produced. It was, accordingly, decided that the results would simply be summarized and presented without further analysis. This decision was not taken easily. In fact, the representatives of two of the three sponsoring bodies felt that it was a mistake to publish any figures at all. Their objections to the procedure and their reasons for dissenting are presented in the foreword to the Report.

The inadequacy of the reported figures arose from a number of sources. It turned out, for example, that there were a number of ambiguities and inconsistencies in the *Guidelines*. The *Guidelines* were also incomplete in a number of respects in that they did not deal with many situations, common in practice, which were not anticipated by the authors.

The major source of confusion, however, was the basic inadequacy of the university record systems and, to a lesser extent, the lack of a sufficient supply of adequately qualified people to carry out the extensive and onerous tasks involved in the analysis. The deficiency in facts forced the use, in many cases, of arbitrary formulae rather than factual allocations and the deficiency in qualified analysts sometimes resulted in the incorrect application of inadequate or irrelevant formulae. This, in turn, led to a serious loss of significance in the results especially in matters involving distinctions or discriminations between sub-programs.

The major criticism which can be, and has been, levelled at the Cost Study concerns the adequacy and appropriateness of the questionnaire approach to the analysis of faculty salaries. It can be argued with some justification that it is impossible for anyone to estimate their time distribution over a period as long as a year with any degree of accuracy and that the resulting analysis will be too subjective and too subject to conscious or unconscious bias to be at all reliable. It can, of course, also be argued on the other side that the general impression is all that matters and that an over-all estimate of 25% or 30% of time on research or administration will be sufficiently accurate for the purposes of a general analysis. At the very least, it can be argued that such an estimate, even if it is highly imaginative, will at least represent the respondent's opinion of what he should be doing and that this picture may be just as relevant for cost analysis as the actual one.

It must be emphasized again that most of the errors and biases in the results obtained from the study are in the

direction of nondiscrimination and that the apparently similar figures reported in many cases may only reflect the excessive use of arbitrary averages in the subordinate calculations. If, for example, some particularly expensive facility or resource is used exclusively by one relatively small program, the actual cost of that program will in fact be substantially greater than the costs of those programs not using such facilities. A failure to make the required factual allocation, accordingly, can understate the unit cost of the related program significantly even though the total involved in terms of the whole institution is not material or significant. Such misallocations have undoubtedly occurred in many cases especially with respect to graduate programs in the sciences.

In view of this general limitation on the effectiveness of the allocation, too much weight cannot be given to the surprisingly low costs attributed by the study to graduate programs generally. This apparently anomalous result has, however, drawn attention to the fact that graduate programs need not necessarily be more expensive than undergraduate. In fact, it becomes obvious on reflection that a program consisting of only two or three courses is bound to be cheaper than an undergraduate program with five or six unless the classes are very much smaller.

The costs of graduate programs, however, are actually left very much up in the air by the cost study since the determination of the costs of supervising student research and thesis work turned out to be completely unsatisfactory. There were three areas of difficulty. It was very difficult to determine the actual effective number of thesis students due to the large number of "all but dissertation" students in most programs and the lack of information regarding the number actually being supervised on a full-time basis. Faculty also experienced difficulty in distinguishing between their own research work and that of the student and, as a result, the time distributions in this area are probably the least reliable of any in the study. Last, but by no means least, is the whole unresolved problem of the general relationship of research to instruction costs in general and to graduate student supervision in particular.

Although the position of research in the university and its relationship to instructional costs was a subject of long and heated debate by the Committee and research staff, there was no satisfactory resolution of the problem. The method used in the study to distribute research costs among years and levels was purely arbitrary and the only statement that can be made about the results produced is that they are incorrect and probably understate graduate costs.

To no one's surprise, several analyses made during the course of the study show a strong correlation between research activity and graduate enrolment. We do not know, however, what the interrelationship actually is—does research attract graduate students or vice versa? We do not even really know whether the business officers' claim that the rest of the university budget is subsidizing research through lack of adequate overhead contributions is actually true or if, on the contrary, university support for graduate instruction is so skimpy that no instructional activities could be carried on without the facilities provided by research grants. Until more facts are available regarding what is actually involved in current research activity and more agreement has developed among academics regarding the place of research in a university program, the relationship between research and instructional costs cannot be resolved.

Library costs represent another aspect of the university operation that we were unable to solve and that will remain insoluble until some more basic questions are answered.

Although the cost study, viewed as a fact finding operation must be considered a failure, it was felt by those involved that the effort involved was not wasted. It was generally agreed, in fact, that the operation had demonstrated that it was possible to apply the normal techniques of cost analysis to universities and that, given better basic data and the resolution of several conceptual problems regarding the nature and purpose of the university, accurate cost analyses could be prepared and that such analyses would be helpful to all of those concerned with the planning, financing, or evaluation of university activities.

There were a number of matters, less obviously related to the study of costs which came to our attention during the course of the study which we felt were sufficiently important to require mention in the report. Unfortunately, our views on the importance of these matters were not shared by all members of the Committee. The points were, in fact, ultimately included in the report but the price for their inclusion was the withdrawal of Committee approval and sponsorship of the report as a whole. I still feel, however, that those engaged on the study had had an unprecenter ded opportunity of reviewing university reports and discussing and observing their activities and that we had an obligation to report the conclusions we had come to regarding the characteristics of university costs. I still feel strongly about this and I am, as a result, going to conclude by summarizing these observations.

The first point which we tried to make was that universities, although large and complex organizations, are actually composed of relatively simple subordinate units and that the relationships between the costs and activities of these subordinate units are not very difficult to understand. The costs of each university operating unit are, in fact, determined by the decisions which are made regarding such matters as faculty teaching load, class size, student course load and the extend to which supplementary facilities such as laboratories, libraries, consultation opportunities and so on are actually provided. The cost of any program can, as a result, be calculated with a fair degree of accuracy once these basic policy decisions have been made. It is, in other words, rather easy to make a "model" of each sub-unit and of the university to make as a whole. Such models have, in fact, been constructed at a number of institutions already.

The second and somewhat related point was that the nature of these factors and the operating patterns of the universities are such that the actual cost structure of the university is relatively rigid. From this it follows that once the basic policy decisions have been made and the facilities provided, the costs actually incurred in offering a program will not be significantly affected by variations in enrolment within rather wide limits. In the long run, of course, the level of services provided will be adjusted to the demand although

the observed situation at many universities suggests that the long run in some cases has been very long indeed. In the shorter run, however, this characteristic of university costs produces a situation in which the marginal costs associated with changes in enrolments, up or down, are relatively slight.

From this observation we developed our final and most contentious conclusion to the effect that the payment of per capita student grants is not a very efficient or effective way of financing university operations. Under such a system, revenues will only match costs at one particular level of enrolment and for most of the time, when enrolments diverge from this figure, there will be serious discrepancies between costs and revenues. These discrepancies, in turn, can be expected to place pressures on university administrations which may lead to actions not in the best interests of higher education generally. We suggested, therefore, that university administrators and government officials should devote some of their efforts to an attempt to find a more appropriate method of financing, one, perhaps, which would reflect the actual structure of most university costs.

I must confess that this proposal is, as our critics allege, not really within the terms of reference of a *cost* study. It is, however, a matter of important public concern which is continually being discussed by people who show no apparent understanding of the structure of university costs and their relevance for financing methods, so I felt that it should be mentioned again.

RESEARCH AND FACULTY INVOLVEMENT IN A JUNIOR COLLEGE

Ann Bromley
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Research in the community junior colleges began only recently as a formalized activity. Periodic surveys have been conducted on the degree and role of institutional research. A brief review of some of these surveys furnishes us some objective evidence as to the trend in this area. In 1961, B. Lamar Johnson[1] surveyed the western junior colleges and received responses from 100. He found that only two had a full-time coordinator responsible for research. Approximately 27 per cent had a part-time coordinator who assumed this responsibility as part of his workload.

Swanson[2] undertook a nationwide study four years later. He selected his sample from the members listed in the directory of the American Association of Junior Colleges. His findings showed that 19 per cent of the junior colleges in the nation had some type of formal research organization, with five having a full-time staff member responsible for research.

Roueche and Boggs[3] conducted a telephone survey in 1968 to determine junior college involvement with a commitment "to programs of institutional research." Seventy institutions responded. Approximately 23 per cent had personnel employed to coordinate this activity. Two years ago Van Istendal[4], who had undertaken a similar survey, reported that approximately one-third of the junior colleges sampled in his study had a formalized research program and either a full-time or part-time staff member responsible for this activity. The trend is clear if these percentages reflect the increasing commitment of community junior colleges to the role of research as an integral part of their programs and services.

Tangible visual evidence of the developing importance of research in the junior colleges is the increase in the number of junior college representatives who attend the national meetings of the Association for Institutional Research and the American Educational Research Association. As you probably are aware, within the last few years, interest groups in both of these associations have been formalized and membership is directed primarily toward the researcher associated with the community junior colleges.

The past and current scene for research in the junior college is one of increased emphasis, but with extremely limited staff and limited funds. Several of the researchers cited earlier inquired about the budgetary status and size of the budgets for research activities in the community junior college. The results were not consistent but they found that if a research office received from three to five percent of the college budget it enjoyed extremely favorable funding. In many instances, the monies may have been as low as approximately one-half of one per cent of the total budget.

Even with these limitations, a viable program of institutional research can be developed if the research coordinator in the junior college utilizes the talents of the faculty and the administrative staff.

The need for involvement. One of the questions that Roueche and Boggs asked in their 1968 survey was "How many institutional research reports are completed annually in America's junior colleges?" They found "The seventy participating institutions reported that a total of 119 institutional research studies were in progress at the time and that 119 studies had been completed during the two previous years– a total of 238 studies. That figure suggests that the number of institutional research studies has increased measurably during recent years and that the average number of studies per institution is 1.1 per year. The range of reported studies was from 0 to 13 with a mean of 3. Eighteen of the participating institutions had no studies to report."[5] If the Roueche and Boggs report of only 1.1 research studies in a junior college per year is accurate and if institutional research is to have an impact on the decision-making process in a junior college, then researchers need to examine ways and means of maintaining the quality of research while increasing the quantity and the degree of implementation in junior colleges. Faculty involvement can be the way.

CRITICAL FACTORS

In attempting to involve faculty, administrators and students in research in a community college, there are two factors which are essential if faculty-administrator-student involvement is to be a positive experience:

1. The philosophical environment of the institution toward research and the support by the other administrators on the staff are key factors and are particularly necessary to secure the cooperation of faculty and students in cooperative or college research activities.
2. Community junior colleges have prided themselves on being primarily teaching institutions ever since their initial development; therefore, the image of the research office needs to be one of service, cooperativeness and availability for assistance to faculty and/or students. If the students request help in designing the student evaluation of faculty, the research office should respond. The research office should help if a faculty member wants to find out whether the students in Class A are performing better than students in Class B.

There may be other factors that are as strategic; but these two are considered to be fundamental if faculty and students are to be meaningfully involved in research activities and if they are to attempt to implement some of the research findings in the college.

WAYS AND MEANS

There are various methods of involving faculty and staff in research and of educating them to its value in their

classrooms and in the college. These "ways and means" are not all-inclusive, merely suggestive. The five listed have proven worthwhile and effective:

1. Communication techniques;
2. The use of a Research Advisory Committee;
3. Faculty sponsors for the College Endorsed Research;
4. Involvement in inter-institutional research and consortia;
5. Participation in individual research and college committees.

COMMUNICATION TECHNIQUES

Each of you probably has ways and means of communicating with members of the administration and with faculty and staff. Each of you probably has determined the most effective ways of communicating in your college. Each of you probably is aware that as new staff members join the junior college community each year they too must be informed of the services and assistance that research can give them.

In 1969, the ERIC Clearinghouse for Junior College Information developed a topical paper designed to stimulate research in the junior college. It presents a model for instructors, administrators and researchers who wish to study the effect of their efforts. The paper begins "A junior college English instructor thinks his more mature evening students are performing better than his day students. A philosophy professor feels that reprimanding students about performance on an examination does more harm than good. A political science instructor calls on the library staff to help her increase student use of current history materials .... What do all these teachers have in common? All are interested in student learning and all are on the verge of formulating explanations that can be tested for accuracy."[6] This topical paper "Is It Really A Better Technique?" may serve as a basic research primer for junior college faculty and staff who are somewhat unsophisticated in research techniques and research design. It is a readable document. It furnished the faculty or staff member with a very simple method for examining whether his more mature evening students are performing better than his day students, and so forth.

At Santa Fe Junior College, each new staff member receives a copy of this paper shortly after the beginning of a term. It is accompanied by a letter of invitation from the Director of Research to scan the material. It serves to bring to his attention that there is a researcher at the college who is willing to assist him.

Each year that this device has been used, at least two or three staff members who received the booklet in September have come to the office to discuss questions that concern them in their instructional process. Frequently during the in-service training sessions for new faculty and staff, the Office of Research makes a presentation to the group. The brochure is distributed at this time if it has not been sent through the campus mail.

When discussing communication techniques, do not overlook use of the internal college news media as well as the local and student newspapers. A good personal working relationship with both the editor of the student newspaper and the college public relations director is helpful in securing releases which involve research and which are related to students or faculty. These two influential people usually are receptive to short write-ups on faculty members who are trying something different in their classrooms. They usually are more than willing to release an article on the characteristics of the student body for the incoming fall term; and they are of assistance in releasing information which might involve national research projects in which the college may be participating. For example, during the past year, they were particularly helpful in disseminating the information for the college's participation in Project Focus, which was a joint undertaking between various colleges in the country and the American Association of Junior Colleges.

Initial impressions are important. In some junior colleges it is the procedure to mail to new faculty members a college packet containing a college catalog, the faculty handbook, student handbook, etc., before the beginning of their in-service and/or orientation period. Frequently, before actual classroom involvement, the staff reviews the materials more carefully than they do at any other time. It is therefore suggested that the information concerning the Office of Research, its services and its relationship to the academic program be presented in the faculty handbook and in the catalog so the service aspects of the research office are emphasized.

One of the most effective communication techniques is for the Office of Research to serve as a clearinghouse of research information in sharing reports, professional news items and materials from junior college research reviews. The research officer of the junior college needs to be aware of the activities going on within the college so that as materials, information and research reports come to his attention, he can disseminate them to the individuals on campus who are similarly involved. For example, computer assisted instruction is one of the newer developments on several community college campuses. As information and research reviews are received by the Research officer concerning this activity, this material should be forwarded to the involved or interested faculty or staff member. He generally will reciprocate by keeping you informed of the developments in his own area and will seek your assistance when he needs it.

Almost every write-up of the responsibilities and functions for the research officer in a junior college contains a statement that he should maintain a central file system of the research activities of the college. This is primarily a collection function, but to simply collect and maintain the files is performing only approximately one-fourth of a valuable service. The information should be disseminated.

Let me share one technique that has proved effective in our junior college. It is a periodic formal publication containing a collection of studies ranging from classroom activities to college-wide research, from short statements on different instructional approaches to formal dissertation abstracts, from subjective observations to intricate experimental designs and from up-dated reports presented in last

year's document to projects initiated immediately preceeding the publication. Contributors include faculty, administrative staff members, students and graduate students for whom the college has served as a laboratory. We published two such documents. The first collection was issued in 1969. It contained 7 instructional research activity reports, 5 resumes of faculty dissertations, 5 reports on inter-institutional research projects, 3 reports on college research projects and 4 write-ups on college endorsed research activities. (College endorsed research activities are those which are undertaken, usually be a graduate student and sponsored or supervised by one of the college's faculty members in conjunction with a university project.) A total of 24 reports were included in the first document. We published the second collection last year. It contained 43 presentations: 28 instructional reports; 3 abstracts of faculty or staff dissertations; 3 inter-institutional research projects; 6 reports on college research; and, 4 on college endorsed research projects. The greatest increase was in the number of faculty reporting instructional activities. It increased from 7 to 28. This type of publication serves as a centralized file for the collection of research activities on a campus. It is informational. It stimulates others on the faculty and staff to try different approaches and to report them, and it provides personal satisfaction to the authors. It is distributed throughout the college, to the ERIC Clearinghouse for Junior Colleges and nationwide, to those who request copies, if available. Many of the faculty use this material to supplement their college personnel file.

RESEARCH ADVISORY COMMITTEE

There is considerable value in establishing a Research Advisory Committee of faculty, staff and students. Students should be included on the committee for a number of good reasons. They make useful contributions in the development of any research project. They often help in the review of a research project. They may assist in clarifying the purposes of the research projects. Frequently, students are the sample population.

The composition of the committee is crucial to its effective functioning. The research officer should attempt to nominate or select individuals who represent the college community to participate on the committee. He should serve as chairman. He should serve as group leader and should be very much aware that the committee may serve the following purposes:

1. Assist the research officer in establishing research priorities;
2. Suggest possible areas of inquiry;
3. React to ideas of the institutional researcher and others concerning possible studies;
4. Serve as a channel of communication between the office, the faculty and the students;
5. Analyze and constructively review the various research activities of the college wehther they be carried out through the research office, a faculty member or a graduate student who wishes to undertake a study at the college.

One of the responsibilities of the Research Advisory Committee should be to establish ad hoc committees of other faculty members, students and personnel, to serve on particular projects. For example, it would be appropriate for the Research Advisory Committee, in implementing a follow-up study of graduates, to request other faculty members who have a particular interest in this problem to serve on an ad hoc committee. This committee would develop the project, identify the needed data and implement the study. The research officer might serve as chairman of the ad hoc committee, or simply as a consultant and resource person. In addition to the responsibilities already indicated for the Research Advisory Committee, it could provide an evaluative function for the institutional research program of the college.

FACULTY AS SPONSORS OF RESEARCH

As the junior colleges increase across the nation and as training programs in the various university settings attempt to utilize these junior colleges as laboratories for their students, the junior colleges find themselves in the position of having their students, faculty and staff under examination. The degree of this involvement depends on the proximity of the junior college and the institution with a junior college training program. However, the increasing need for junior college personnel will be accompaneid by an increase in the requests by universities and their graduate students to affiliate with junior colleges to examine their programs, students, faculty, etc. At our college, requests by graduate students to use Santa Fe samples are directed to the Research Advisory Committee for review and possible approval. The Research Advisory Committee then requests that a Santa Fe faculty or staff member serve as the liaison person with such a graduate student. The liaison person makes appropriate arrangements within the college to facilitate this particular project. The faculty member becomes involved in this way in the research, interested in its results and aware of its implications for the college. The faculty member has the responsibility to secure a copy of the results of the study and to submit it for inclusion in the compilation of the college research activities.

INVOLVEMENT IN INTER—INSTITUTIONAL RESEARCH AND CONSORTIA

Within recent years various consortia and research councils have developed on the junior college scene. To mention a few—the League for Innovation for Community Junior Colleges, the Florida Inter-institutional Research Council, and G.T. 70. Participation has many advantages. Not the least among them is the in-service training that it affords the research officer.

Research councils frequently undertake projects which involve faculty and staff. A researcher is well advised to invite faculty to accompany him to the council meetings when the various research areas are discussed. Workshops are related to faculty problems and needs.

Let me illustrate a few that various faculty or administrators from our junior college have been involved in within recent months: A divisional chairman leadership

workshop; a projection analysis workshop; a PPBS workshop; and a workshop for the junior college presidents discussing the role and functions of the institutional research officers. Such activities establish a better working relationship between the research and the academic areas of the college.

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[1] B. Lamar Johnson, "Institutional Research in Western Junior Colleges," *Junior College Journal*, March, 1962.

[2] Herbert Leland Swanson, "An Investigation of Institutional Research in Junior Colleges of the United States" (unpublished doctoral dissertation, University of California, Los Angeles, School of Education, 1965).

[3] John Roueche and John Boggs, *Junior College Institutional Research: The State of the Art* (Washington, D.C.: American Association in Junior Colleges, 1968).

[4] Theodore Van Istendal, "Community College Institutional Research," paper presented at Association for Institutional Research Forum, Chicago, May, 1969.

[5] Roueche and Boggs, *op. cit.*, p. 38.

[6] Aikin Connor, "Is It Really a Better Technique?," ERIC Clearinghouse for Junior Colleges, Los Angeles, 1969, p. 1.